

# PortMaster



## **Command Line Administrator's Guide**

**Livingston**  
Enterprises, Inc.

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# Preface

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## About This Guide

This guide documents the ComOS™ Command Line Interface—also known as the CLI—available on all Livingston PortMaster™ products.

You can also configure the PortMaster with the graphical user interfaces (GUIs) PMconsole™ for Windows and PMconsole for UNIX. Each has its own administrator's guide.

Information in this guide is current for the following releases:

PortMaster Release	PortMaster Product
Release 3.5	PortMaster 2 Communications Servers (PM-2 series)
	PortMaster 3 Integrated Access Servers (PM-3 series)
Release 3.6L	PortMaster Office Routers (OR series)
Release 3.6R	PortMaster Internetwork Routers (IRX series)

If you are running a *later* release of ComOS, see the release notes for changes. If you are running an *earlier* release of ComOS, some commands might not be available or might produce different output.

This guide is designed to be used by qualified system administrators and network managers.

Refer to your hardware installation guide for information on attaching a console before attempting to configure your PortMaster with the Command Line Interface.

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## *Preview of This Guide*

This guide provides the information you need to use the Command Line Interface to configure your PortMaster. For more detailed configuration information, see the *Configuration Guide for PortMaster Products*.

This guide includes the following chapters. An index of commands and a subject index appear at the end.

**Chapter 1, "Installing the PortMaster,"** describes the procedure for assigning an IP address to a PortMaster. Further configuration can be done from the console or by using Telnet to connect to the PortMaster across the network.

**Chapter 2, "Introduction,"** provides an overview of the Command Line Interface.

**Chapter 3, "General Commands,"** describes all the commands to administer the PortMaster, other than configuration commands.

**Chapter 4, "Global Configuration,"** describes how to use the Command Line Interface to set global parameters on the PortMaster, including default and alternate hosts, gateway and metric, and name service. Remote Authentication Dial-In User Service (RADIUS), ChoiceNet, Netmask, and Simple Network Management Protocol (SNMP) Table configuration commands are also described.

**Chapter 5, "Ethernet Interface,"** describes how to use the Command Line Interface to configure Ethernet interfaces.

**Chapter 6, "Asynchronous Ports,"** describes how to use the Command Line Interface to configure asynchronous ports. Modem Table configuration commands are also described.

**Chapter 7, "Synchronous Ports,"** describes how to use the Command Line Interface to configure synchronous ports.

**Chapter 8, "Parallel Port,"** describes how to use the Command Line Interface to configure the parallel port.

**Chapter 9, "ISDN BRI Ports,"** describes how to use the Command Line Interface to configure ISDN Basic Rate Interface (BRI) ports.

**Chapter 10, "Configuring the PortMaster 3,"** describes how to configure the Primary Rate Interface (PRI) E1 or T1 lines of the PortMaster 3.



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**Chapter 11, "Configuring OSPF,"** describes how to configure the PortMaster for using the Open Shortest Path First (OSPF) routing protocol.

**Chapter 12, "User Table,"** describes how to use the Command Line Interface to configure the User Table for dial-in users. If you are using RADIUS instead of or in addition to the User Table, refer to Chapter 4 in this guide for information on configuring the PortMaster as a RADIUS client, and refer to the *RADIUS Administrator's Guide* for information on setting up a RADIUS server.

**Chapter 13, "Location Table and DLCI Table,"** describes how to use the Command Line Interface to configure the Location Table for dial-out locations.

**Chapter 14, "Filter Table,"** describes how to use the Command Line Interface to create, edit and delete filters in the Filter Table.

**Chapter 15, "Static Route Table and Host Table,"** describes how to use the Command Line Interface to configure the Static Route Table and the Host Table.

## ***Related Documentation***

The hardware installation guide gives instructions for installing your specific product on the network. Use the hardware installation guide before you attempt to configure the PortMaster.

The *Configuration Guide for PortMaster Products* provides an overview of network applications and configuration for PortMaster products.



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## Document Conventions

The following table describes the typeface changes and symbols used in this guide.

Typeface or Symbol	Meaning	Example
Regular font	The normal text typeface	This is the default.
Regular font, in "quotation marks"	The names of commands, parameters, and directories, when used in body text.	Use "version" to display the version number.
<i>Italic font</i>	Command-line placeholder: replace with a real name or value.	To set the IP address of the Ethernet interface: set <i>Ether0</i> address <i>Ipaddress</i>
Regular font in [brackets]	In command syntax, optional <i>keywords</i> or values that you can use in commands.	set nameserver [2] <i>Ipaddress</i> Use the optional parameter to set an alternative name server.
	In body text, a key to press.	Password:[Enter]
Vertical bar ( )	Separates two or more possible options in a command.	set debug isdn on off

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## Command Description Format

Configuration commands are presented chapter-by-chapter by interface or table. Each command is documented in the following standard format:

### ***Telnet***

This command sets the Telnet administrative port.

**set telnet *Tport***

*Tport*                      Telnet administrative port. Default is 23.

### ***Usage***

This value allows the administrator to use the telnet protocol to maintain the PortMaster. The value can be any number from 0 to 65535. If set to 0, the PortMaster disables the telnet administration function. Ports numbered 10000 through 10100 are reserved and should not be used for this function.

### ***Example***

Command> set telnet 23  
Setting Telnet Administration port to 23

### ***See Also***

set maximum pmconsole - page 4-14  
set serial-admin - page 4-15  
telnet - page 3-12

This standard format includes the following elements:

- The command name—"Telnet" in the example—followed by a brief description of its function.



- 
- The command line syntax—"set telnet *Tport*" in the example—with any values (like "*Tport*") that must be replaced by a valid port number when you give the command.
  - A description of any values—"Tport" in the example—and values and keywords used in the command line. PortMaster defaults are also indicated here.
  - The *Usage* section with specific information, such as limitations or ranges for the values, together with background information to help you understand how to use the command. See the *Configuration Guide for PortMaster Products* for more detailed background information.
  - The *Example* section with the "Command>" prompt followed by an example of how to type the command, and the response from the PortMaster after you press [Enter]. For more complex commands, such as in those in Chapter 14, "Filter Table," several detailed examples are given.
  - The *See Also* section lists related commands.

## ***Contacting Livingston Technical Support***

Every Livingston product comes with a one year hardware warranty.

To obtain technical support, contact Livingston Enterprises Monday through Friday between the hours of 6 a.m. and 5 p.m. (GMT -8). Please record your Livingston ComOS version number and report it to the technical support staff.

- By voice, dial (800) 458-9966 within the USA (including Hawaii), Canada, and the Caribbean, or +1 (510) 426-0770 from elsewhere.
- By FAX, dial +1 (510) 426-8951.
- By electronic mail, send mail to "support@livingston.com."
- Using the World Wide Web, see "http://www.livingston.com/."

You can schedule one-hour installation appointments in advance by calling the technical support telephone number listed above.

New releases and upgrades of Livingston software are available via anonymous FTP from "ftp.livingston.com."



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Livingston maintains the following Internet mailing lists for PortMaster users:

- portmaster-users

A discussion of general and specific PortMaster issues, including configuration and troubleshooting suggestions. To subscribe, send electronic mail to "majordomo@livingston.com" with "subscribe portmaster-users" in the body of the message.

The mailing list is also available in a daily digest format. To receive the digest, send electronic mail to "majordomo@livingston.com" with "subscribe portmaster-users-digest" in the body of the message.

- portmaster-radius

A discussion of general and specific RADIUS issues, including configuration and troubleshooting suggestions. To subscribe, send electronic mail to "majordomo@livingston.com" with "subscribe portmaster-radius" in the body of the message.

The mailing list is also available in a daily digest format. To receive the digest, send electronic mail to "majordomo@livingston.com" with "subscribe portmaster-radius-digest" in the body of the message.

- portmaster-announce

Announcements of new PortMaster products and software releases. To subscribe, send electronic mail to "majordomo@livingston.com" with "subscribe portmaster-announce" in the body of the message. All announcements to this list also go to the portmaster-users list. You do not need to subscribe to both lists.



The Command Line Interface provides a non-graphical user interface for administering Livingston PortMaster Communications Servers (PM-2 series), Internetwork Routers (IRX series), Office Routers (OR series), and Integrated Access Servers (PM-3 series). This interface does not require any software to be installed. You can access this interface either directly through the asynchronous ports on the PortMaster, or by connecting via Telnet to the PortMaster once an IP address (or IPX network) is set on it. Up to four concurrent administrative Telnet sessions are allowed by default.

The hardware installation guide describes how to connect to the network and console; that information is also included here.

The following procedure walks you step-by-step through the basic PortMaster installation:

1. Set the power switch on the PortMaster to OFF.
2. Attach the power cord to the PortMaster and to a properly grounded electrical outlet.
3. Attach an RS-232 serial null modem cable to PortMaster port C0 (or S0 if there is no C0) and the serial port of a PC or ASCII terminal, and raise dual in-line package (DIP) switch 1.

The terminal should be set for 9600 bps, 8 data bits, 1 stop bit, no parity.

4. If connecting to a network, you may connect the 10BaseT, attachment unit interface (AUI), or BNC Ethernet port on the PortMaster to an Ethernet hub or transceiver, using the appropriate cable. For information on setting the Ethernet DIP switches, refer to the hardware installation guide.



**Warning** – Before you apply power, refer to “Safety Recommendations” and “Power Guidelines” in the hardware installation guide for the Livingston product you are installing.

5. Set the power switch to ON.

The Ethernet cable does not come with the PortMaster.



6. Verify that the System LED is active.

While the PortMaster is booting, the LED blinks three times per second, then once per second. The LED blinks OFF once every five seconds during normal operation.

If the System LED does not behave in this way, see the information on hardware problems and solutions in the hardware installation guide.

7. Verify that the Link LED is ON, if you are using 10BaseT.

This LED is solidly lit when 10BaseT link integrity exists. When the Link LED is OFF, a 10BaseT link error has been detected.

If the Link LED does not behave in this way, see the information on hardware problems and solutions in the hardware installation guide.

The Link LED is not used for link status for the AUI or BNC connectors.

8. Verify that the Network LED is ON when Ethernet traffic is present.

The Network LED blinks once for every packet transmitted or received. In heavy traffic situations, the LED may appear solid.

If the Network LED does not behave in this way, see the information on hardware problems and solutions in the hardware installation guide.

9. Once the PortMaster has booted and all connections are verified, the console (PC or terminal) displays a login prompt.
10. Log in and enter your password:

```
login: !root
```

```
Password: [Enter]
```

11. Set the IP address, if you are using IP.

Replace the *italicized* values with the appropriate values for your network.

```
Command> set ether0 address 192.168.200.1
```

```
Command> save all
```

```
Command> quit
```

12. Set the IPX network address and Ethernet protocol, if you are using IPX.  
Replace the *italicized* values with the appropriate values for your network.

```
Command> set ether0 ipxnet AFAF0808  
Command> set ether0 ipxframe ethernet_802.2  
Command> save all  
Command> quit
```

13. If you are planning to use the Command Line Interface to configure your PortMaster, you can do so now. If you are planning to use PMconsole to configure your PortMaster, you can disconnect the terminal from the C0 or S0 port now, and put away this manual.

For configuration information, refer to the *Configuration Guide for PortMaster Products*. Once you have decided which administrative interface you want to use, refer to the administrator's guide for that interface.





The Command Line Interface can be used to administer any Livingston PortMaster Communications Server (PM-2 series), Internetwork Router (IRX series), Office Router (OR series), or Integrated Access Server (PM-3 series). When the name *PortMaster* is used in this guide, it can refer to any of these PortMaster models.

This chapter provides a summary of PortMaster configurable ports, by model. It also describes how to start the Command Line Interface and reboot the PortMaster, and provides an overview of PortMaster commands and arguments.

## PortMaster Configurable Ports

The Command Line Interface can be used to configure your PortMaster ports. Table 2-1 lists the configurable ports by PortMaster model.

Table 2-1 Available Port Types by PortMaster Model

Model	Ports					
	Ethernet	Asynchronous	Synchronous	Parallel	BRI U	BRI S/T
OR-M	ether0	s0-1				
OR-ST	ether0	s0				s1-s2
OR-U	ether0	s0			s1-s2	
OR-LS	ether0	s0	w1			
OR-HS	ether0	s0	w1			
PM-2	ether0	s0-9		p0		
PM-2E-10	ether0	s0-9		p0		
PM-2E-20	ether0	s0-19*		p0	s10-19*	s10-19*

Table 2-1 Available Port Types by PortMaster Model (Continued)

Model	Ports					
	Ethernet	Asynchronous	Synchronous	Parallel	BRI U	BRI S/T
PM-2E-30	ether0	s0-29*		p0	s10-29*	s10-29*
PM-2ER-10	ether0	s0-9	w1			
PM-2ER-20	ether0	s0-19*	w1		s10-19*	s10-19*
PM-2ER-30	ether0	s0-29*	w1		s10-29*	s10-29*
PM-2R	ether0	s0-9	w1			
PM-25	ether0	s0-24 <sup>†</sup>				
PM-2i-U	ether0	c0			s0-9	
PM-2i-ST	ether0	c0				s0-9
PM-2E-10I-U	ether0	c0			s0-29*	
PM-2E-10I-ST	ether0	c0				s0-29*
IRX-111	ether0	s0	s1			
IRX-112	ether0	s0	s1-2			
IRX-114	ether0	s0	s1-4			
IRX-211	ether0-1	s0	s1			
PM-3 <sup>‡</sup>	ether0	c0				

\* Ports s10-19 are ISDN B channels if a MOD-10I-U or MOD-10I-ST board is placed in the first expansion slot. Ports s20-29 are ISDN B channels if a MOD-10I-U or MOD-10I-ST board is placed in the second expansion slot.

<sup>†</sup> A single asynchronous serial port (S0) is provided, as well as three high-density 68-pin connectors, each of which supports eight asynchronous serial devices.

<sup>‡</sup> The PortMaster 3 Integrated Access Server has one or two E1 or T1 PRI lines that can be used as ISDN PRI B channels, digital modems, leased lines, or Frame Relay connections. See the *PortMaster 3 Installation Guide* for details.



## Accessing the Command Line Interface

To access the Command Line Interface:

1. Connect via Telnet to the PortMaster or connect to an asynchronous port, and log in as follows:

```
Login: !root
Password: Password
Command>
```

*Password* is the PortMaster administrative password. Table 2-2 lists commands that are described in more detail in the following chapters.



**Note** – If you are unable to log in to your PortMaster, refer to the information on how the PortMaster works, and the troubleshooting section in the *Configuration Guide for PortMaster Products*.

Table 2-2 lists the basic PortMaster commands. Some are complete commands; others require additional keywords or values as described in following chapters.

Table 2-2 User Commands

Command	Description
add	Adds an entry to a PortMaster table.
delete	Deletes an entry from a PortMaster table.
dial	Begins dialing to the specified network location.
help	Provides information on each of the commands, including usage and syntax.
ifconfig	Displays configuration values for all interfaces and allow modification of active values.
ip	Sets the default environment to IP.
ipx	Sets the default environment to IPX.
ping	Sends Internet Control Message Protocol (ICMP) echo request packet to test connectivity.



Table 2-2 User Commands (Continued)

Command	Description
pmlogin	Establishes a login using the PortMaster login service to a specified host on the network.
ptrace	Displays packet traffic passing through the PortMaster, using the specified filter.
quit, done, exit	Exits the command line interface.
reboot	Reboots, using the currently saved configuration.
reset	Resets a specific port (or ports) to the current default configuration, and drops any active sessions on the port.
rlogin	Establishes a login using the rlogin service to a specified host on the network.
save	Writes the current configuration to PortMaster nonvolatile memory.
set	Sets the indicated serial port, Ethernet port, global parameter, or table parameters.
show	Shows the status of each specified port, all ports, global configuration, or table.
telnet	Connects via Telnet from the PortMaster to a specified host on the network.
traceroute	Traces network routes to show connectivity path.
version	Displays the version number of the ComOS software that runs the PortMaster, and the uptime since the last boot.
!!	Repeats the last command.

2. Configure your PortMaster, referring to the port-specific or table-specific chapters in this guide and the *Configuration Guide for PortMaster Products*.

## Rebooting a PortMaster

You must reboot a PortMaster to change the Ethernet IP address, IPX network address, Ethernet protocol, or ISDN switch, or to run an upgrade loaded into Flash RAM earlier, as follows:

```
Command> reboot
```



**Note** – Rebooting performs a soft reboot that takes approximately 30 seconds. This process resets all active ports to their saved configurations, disconnecting all active sessions. Any changes made since a “save” command was last issued will be lost when you reboot, unless you first save them.

## Command Values

Table 2-3 describes the different kinds of values that are used in Command Line Interface commands. These values must be replaced in the commands with appropriate values for your specific needs. For example in the command “add filter *Filtername*,” replacing the value *Filtername* with the name “inet.in” adds a new filter named “inet.in” to the filter table.

Table 2-3 Command Line Values

Value	Represents	Format and/or Value(s)
<i>Area</i>	OSPF area.	Decimal or dotted quad notation.
<i>Cgroup</i>	Group of channels.	“w2” through “w63.”
<i>Channel-list</i>	Series of one or more channel numbers.	<ul style="list-style-type: none"> <li>• For T1, any number(s) from 1 through 24, separated by spaces.</li> <li>• For E1, any number(s) from 1 through 30, separated by spaces.</li> </ul>
<i>Device</i>	Name of network device or pseudo-tty on a UNIX host.	/dev/ttyp0, or /dev/network
<i>Ether0</i>	Ethernet port.	<ul style="list-style-type: none"> <li>• “ether0” or “ether1” on an IRX-211.</li> <li>• “ether0” on all others.</li> </ul> Defaults to “ether0” if omitted.



Table 2-3 Command Line Values (Continued)

Value	Represents	Format and/or Value(s)
<i>Filtername</i>	Name of input or output packet filter.	String of up to 12 printable ASCII characters.
<i>Group</i>	Number of group.	Integer from 0 to 99; 0 is default.
<i>Handle</i>	Network identifier.	"n" followed by a number, with no space in between.
<i>Hex</i>	Number in hexadecimal (hex) notation.	Hex number with leading "0x."
<i>Interface</i>	Interface specification.	For example, "ether0," "frm1," "ptp1," "frmw1," or "ptpw1."
<i>Ippaddress</i>	IP address or host name.	Address is in dotted quad notation.
<i>Ipmask</i>	IP subnet mask—also called a <i>netmask</i> .	Dotted quad notation with 1's in high-order bits, and 0's in low-order bits.
<i>Ipxaddress</i>	IPX address.	Hex notation in following format: <i>Ipxnetwork:node</i>
<i>Ipxnetwork</i>	IPX network number.	32-bit hex number.
<i>Ipxsock</i>	The port number for the IPX socket.	Integer from 0 to 65535.
<i>Itype</i>	ICMP packet type.	0 or higher.
<i>Line0</i>	T1 or E1 ISDN PRI line on a PortMaster 3.	"line0" or "line1."
<i>Locname</i>	Name of internetwork dial-out destination.	String of up to 12 printable ASCII characters.
<i>M0</i>	Digital modem number.	"m0" through "m59."
<i>MTU</i>	Maximum transmission unit. Maximum packet size, in bytes, that an interface can send.	Integer from 100 to 1520.
<i>Metric</i>	Hop count to remote destination.	Integer from 1 to 15. Defaults to 1.
<i>Minutes</i>	Number of minutes.	Integer from 0 to 240; note that 1 has special meaning.



Table 2-3 Command Line Values (Continued)

Value	Represents	Format and/or Value(s)
<i>ModemName</i>	User-defined long or short name for a modem in the Modem Table.	Printable ASCII characters.
<i>NM</i>	Alternative netmask notation. Number of high-order bits set to 1.	"/n" where "n" is an integer from 0 to 32.
<i>Number</i>	Quantity.	Any number 0 or higher.
<i>Password</i>	PortMaster administrative password.	String of up to 16 printable ASCII characters.
<i>RuleNumber</i>	Number indicating the order of a filter rule.	Integer 1 or higher.
<i>S0</i>	Any asynchronous port.	<ul style="list-style-type: none"> <li>• "c0" or "s0" through "s29," depending on PortMaster model.</li> <li>• "all"—Applies the command simultaneously to all asynchronous ports.</li> </ul>
<i>S1</i>	Any asynchronous or synchronous port.	<ul style="list-style-type: none"> <li>• "s0" through "s29" or "w1," depending on PortMaster model.</li> <li>• "all"—Applies the command simultaneously to all asynchronous or synchronous ports.</li> </ul>
<i>S10</i>	Any ISDN port.	Depending on PortMaster model: <ul style="list-style-type: none"> <li>• "s1" through "s2."</li> <li>• "s0" through "s29."</li> <li>• "s10" through "s29."</li> </ul>
<i>Seconds</i>	Number of seconds.	Any number 0 or higher.
<i>String</i>	Character string.	One or more characters in ASCII printable character set.
<i>Tport</i>	TCP/IP port.	Integer from 0 to 65535.

Table 2-3 Command Line Values (Continued)

Value	Represents	Format and/or Value(s)
<i>Ticks</i>	Number of 50-ms increments of time required to send a packet to the destination network.	Integer.
<i>Uport</i>	User Data Protocol (UDP)/IP port.	Integer from 0 to 65535.
<i>Username</i>	Name of user.	String of up to 8 printable ASCII characters.
<i>W1</i>	Any synchronous port.	<ul style="list-style-type: none"><li>• "s1" through "s4" or "w0" through "w63," depending on PortMaster model.</li><li>• "all"—Applies the command simultaneously to all synchronous ports.</li></ul>

Table 3-1 lists commands for troubleshooting, general administration, and displaying the configuration of the PortMaster. Definition of these commands—except OSPF commands—follow the table. For OSPF commands see the pages indicated in the table.

Table 3-1 General Commands

Command Syntax
version
reboot
done
quit
exit
help
ifconfig [ <i>Interface</i> ] [address <i>Ipaddress</i> ] [netmask <i>Ipmask</i> ] [destination <i>Ipaddress(dest)</i> ] [ipxnet <i>Ipnetwork</i> ] [ipxframe ethernet_802.2   ethernet_802.3   ethernet_802.2_ii   ethernet_ii] [up] [down] [private] [-private]
dial <i>Locname</i> [-x]
ping [ <i>Ipaddress</i> ]
tracert [ <i>Ipaddress</i> ]
ptrace [ <i>Filtername</i> ]
pmlogin <i>Ipaddress</i>
rlogin <i>Ipaddress</i>
telnet <i>Ipaddress</i>
set debug <i>Hex</i>
set debug isdn   termination on   off
set debug ospf-hello   ospf-event   ospf-lsu   ospf-lsa   ospf-max on   off - see page 11-24
erase all-flash   comos   configuration
erase file <i>String</i>



Table 3-1 General Commands (Continued)

Command Syntax	
erase partition <i>Number</i>	
set console [ <i>S0</i>   <i>p0</i> ]	
tftp get <i>Ipaddress String</i>	
save <i>Ether0</i>   <i>S0</i>   <i>W1</i>   all   global   console   filter   host   location   netmask   <i>p0</i>   route   snmp   user   ospf	
reset <i>S0</i>   <i>W1</i>   all   console   dialer   nic   <i>p0</i>   <i>Handle</i>   ospf	
set sysname <i>String</i>	
show all	
show arp <i>Interface</i>	
show <i>Ether0</i>	
show files	
show global	
show ipxroutes	
show isdn	
show <i>Line0</i>	
show memory	
show modules	
show netconns	
show netstat	
show ospf areas	- see page 11-4
show ospf links [router   network   summary   external]	- see page 11-6
show ospf neighbor	- see page 11-8
show routes	
show <i>S0</i>   <i>W1</i>   <i>p0</i>	
show sap	
show sessions	
show table filter   host   location   modem   netmask   snmp   user	

## Description of General Commands

These general commands are described below.

### Version

This command displays the ComOS software version number, and the uptime since the last boot.

version

### Usage

Always include the version number when reporting problems to Livingston Customer Support.

### Example

```
Command> version
Livingston Enterprises PortMaster Version 3.3.2
System uptime is 21 days 15 hours 34 minutes
```

### Reboot

This command reboots using the currently saved configuration.

reboot

### Usage

A PortMaster must be rebooted for a changed IP or IPX address, Ethernet protocol, or ISDN switch type to take effect, or for an upgrade loaded earlier into Flash RAM to be used.



**Note** – Rebooting performs a soft reboot that takes approximately 30 seconds. This process resets all active ports to their saved configurations, disconnecting all active sessions. Any changes made since a “save” command was last issued will be lost when you reboot, unless you first save them.

## ***Done, Quit, or Exit***

These commands exit the Command Line Interface.

done  
quit  
exit

### ***Usage***

When you use these commands, the connection from your PC or terminal to the PortMaster is terminated. Depending on the PC or terminal software, a message usually appears to let you know that the connection to the PortMaster is lost.

### ***Example***

Command> quit  
Goodbye...

## ***Help***

This command provides online help for the PortMaster commands.

help *CommandName*

*CommandName*      One of the general commands listed in Table 3-1 on page 3-1.

### ***Usage***

If you type the “help” command without a command name, the online help shows a list of valid keywords, with descriptions. If you include a command name, a description or secondary keyword with description is shown.

### ***Example***

Command> help add  
Valid add commands are:  
filter - Add a new packet or access filter  
host - Add a host to the local hosts table  
route - Add a route to the static routing table



ipxroute - Add an IPX route to the static routing table  
 location - Add a new Dialnet dial-out location  
 snmpghost - Add a host to the SNMP access list  
 netuser - Add a SLIP or PPP user to the password table  
 user - Add a login user to the password table

## Ifconfig

This command displays configuration values for all interfaces and allows modification of active values.



**Note** – This command should be entered on one line, without any breaks. The line breaks shown here are due to the limited space available.

```
ifconfig [Interface] [address Ipaddress] [netmask Ipmask]
[destination Ipaddress(dest)] [ipxnet Ipxnetwork]
[ipxframe ethernet_802.2 | ethernet_802.3 | ethernet_802.2_ii | ethernet_ii]
[up] [down] [private [-private]]
```

<i>Interface</i>	The interface specification, for example, ether0, frm1, frmw1.
<i>Ipaddress</i>	The IP address of the interface.
<i>Ipaddress(dest)</i>	The IP address of the the destination of a point-to-point connection.
<i>Ipmask</i>	The netmask for the interface IP address.
<i>Ipxnetwork</i>	The IPX network number of the interface.
<i>ipxframe</i>	The frame type used when sending IPX packets out of the Ethernet interface. Options include the four protocols that follow.
<i>ethernet_802.2</i>	Use Ethernet 802.2 protocol. This is the default encapsulation used by Novell NetWare Version 4.0.
<i>ethernet_802.2_ii</i>	Use Ethernet 802.2_ii protocol. This encapsulation is not commonly used.

ethernet_802.3	Use Ethernet 802.3 protocol. This is the default encapsulation used by Novell NetWare Version 3.11.
ethernet_ii	Use Ethernet II protocol. This is sometimes used for networks that handle both TCP/IP and IPX traffic.
up	The interface is brought up.
down	The interface is shut down.
private	No routing information will be transmitted on this interface.
-private	Routing information is broadcast by Routing Information Protocol (RIP).

## Usage

The "ifconfig" command allows you to view and change the active configuration of all network interfaces. The examples show "ifconfig" used to view the Ethernet parameters, and then change them. For more information, refer to the *Configuration Guide for PortMaster Products*.

While "ifconfig" can be used to modify the active Ethernet interface, it is better to use the "set" commands followed by "save all" and "reboot."

## Examples

```
Command> ifconfig
ether0: flags=16<IP_UP,IPX_DOWN,BROADCAST>
inet 192.168.1.2 netmask ffff0000 broadcast 192.168.0.0 mtu 1500
```

```
Command> ifconfig ether0 address 192.168.100.1 netmask 255.255.255.0
ether0: flags=16<IP_UP,IPX_DOWN,BROADCAST>
inet 192.168.100.1 netmask fffffff0 broadcast 192.168.100.0 mtu 1500
```

## See Also

traceroute - page 3-9  
ping - page 3-8  
ifconfig - page 11-9

## Dial

This command initiates dialing to a network location.

dial *Locname* [-x]

<i>Locname</i>	Location name to dial.
-x	Display send and expect strings during dialing. Also resets some debugging values previously set with "set debug."

## Usage

This command is useful when you are testing a location configuration. Set the location to "manual," set the console, and initiate a connection to a remote location using the dial command. You can watch the connection process to ensure that location-specific parameters are configured correctly.

## Example

```
Command> set console
Command> dial loc1 -x
Starting dial to location loc1 using S1
sendthem (atdt5551212\r)
expect (CONNECT)
atdt5551212\r\r\r\nCONNECTgot it
sendthem (\r)
expect (ogin:)
38400\r\r\r\r\r\r\nserver login:got it
sendthem (john\r)
expect (ssword:)
john\r\r\nPassword:got it
sendthem (jogrtheyz\r)
expect (PPP)
\r\r\nPPPgot it
Chat Succeeded - Starting PPP
LCP IPCP Open
Connection Succeeded
```



### ***See Also***

reset dialer - page 3-19

set console - page 3-15

set debug - page 3-12

## ***Ping***

This command sends ten ICMP echo request packets to the target, and listens for an ICMP echo reply.

ping [*Ipaddress*]

*Ipaddress*

IP address or host name of host to ping.

### ***Usage***

Ping is the basic connectivity test for network debugging. Ping takes its source address from the ether0 interface, as does TCP.

To stop the process, type the "ping" command with no argument.

### ***Example***

```
Command> ping www.edu.com
www.edu.com (172.16.200.3) is alive
```

### ***See Also***

ptrace - page 3-9

traceroute - page 3-9

set reported\_ip - page 4-11

## Traceroute

This command traces a network route by sending packets with Time-To-Live set to between 1 and 30 and printing the addresses that send back ICMP Time Expired packets.

`traceroute [Ipaddress]`

*Ipaddress*

IP address of destination to which route is to be traced.

## Usage

Traceroute (UDP) takes its source address from the interface through which it exits.

To stop the traceroute, issue the command with no argument.

## Example

```
Command> traceroute 172.16.1.2
traceroute to (172.16.1.2), 30 hops max
 1 192.168.96.2
 2 192.168.1.3
 3 172.16.1.2
```

## See Also

ping - page 3-8  
ptrace - page 3-9

## Ptrace

This command allows you to see packet information as it passes through the PortMaster. Filters are used to define which packets you want to display.

`ptrace [Filtername]`

*Filtername*

Name of filter defining which packets to display.

## Usage

Packets permitted by the filter are displayed. "Ptrace" does not display ICMP or UDP packets originating on the PortMaster itself.

To stop ptrace, issue the command with no argument.



**Caution** – When debugging from a Telnet session be very careful not to "ptrace" Telnet packets going between the PortMaster and the host from which you are using Telnet. Doing so can create an endless loop of messages.

## Example

```
Command> add filter x
Command> set filter x 1 permit icmp
Command> ptrace x
Packet Tracing Enabled
```

## See Also

- set console - page 3-15
- add filter - page 14-5
- set filter - page 14-6 to page 14-16
- show table filter - page 14-4
- show filter - page 14-4

## Pmlogin

This command is used for debugging purposes to establish a login session from the PortMaster, using the PortMaster login service to an "in.pmd" daemon running on a host.

*pmlogin Ipaddress*

*Ipaddress*                      IP address or host name.

## Usage

The PortMaster login service can only be used with a host that has the PortMaster "in.pmd" daemon software installed.



### ***Example***

Command> pmlogin ra  
ra login:

### ***See Also***

telnet - page 3-12  
rlogin - page 3-11

## ***Rlogin***

This command is used for debugging purposes to establish a login from the PortMaster to a host.

*rlogin Ipaddress*

*Ipaddress*                      IP address or host name.

### ***Usage***

Rlogin is a method for logging into a remote machine from a workstation. Once the login and password procedures are complete, a session is started on the host.

### ***Example***

Command> rlogin ra  
ra login:

### ***See Also***

telnet - page 3-12  
pmlogin - page 3-10

## Telnet

This command is used for debugging purposes to establish a login from the PortMaster to a host using the Telnet protocol.

telnet *Ipaddress*

*Ipaddress*                      IP address or host name.

## Usage

Telnet is an Internet standard protocol used for remote terminal service.

## Example

Command> telnet ra  
ra login:

## See Also

rlogin - page 3-11  
pmlogin - page 3-10

## Debug

This command sets the use of debug, used for troubleshooting.

set debug *Hex*

set debug isdn | isdn-d | isdn-m | termination on | off

set debug off

*Hex*                              0x0 disables the output for a *Hex* debug. This is the default.  
  
0x18 outputs information about routing table updates from  
RIP.

**0x51** allows observation of Point-to-Point Protocol (PPP), Local Management Interface (LMI), and Annex-D configuration requests and acknowledgments.

**0x54** allows observation of the last 60 characters sent and received on an asynchronous port, and the last 2 termination causes, when a show command is entered on the port.

**0x72** displays interactivity between the ComOS and the Flash or nonvolatile RAM when reading from or writing to the nonvolatile RAM.

**0x74** displays the last 60 characters of I/O.

**0x75** same as 0x51 and 0x54 with more detail.

**0x78** shows Telnet negotiation options when someone is connecting to the PortMaster by Telnet.

**0x81** shows updates being made to the Address Resolution Protocol (ARP) cache.

isdn	Set "on" to show ISDN debugging information (such as connects, disconnects, and SPID registering) on the console.
isdn-d	Set "on" to show ISDN frame debugging information on the console.
isdn-m	Set "on" to show ISDN low-level debugging information on the console.
termination	Set "on" to display detailed port termination information.
off	Clears all debug settings except for <i>Hex</i> debugs (which need to be turned off with the "set debug 0x0" command) currently active in the PortMaster.

## Usage

The "debug" command is useful for troubleshooting such PortMaster activities as the PPP negotiation process. Output is sent to the system console set by the "set console" command. Use of the "debug" command for troubleshooting OSPF protocol is described on page 11-24.



### ***Example***

To debug PPP negotiations, enter the following commands:

```
Command> set console  
Command> set debug 0x51
```

To stop the debug output, enter the following:

```
Command> set debug 0x0  
Command> reset console
```

Refer to the *Configuration Guide for PortMaster Products* for information on interpreting the output.

### ***See Also***

ptrace - page 3-9  
traceroute - page 3-9  
set console - page 3-15  
set debug - page 11-24

### ***Erase***

This command can be used to erase all or part of the nonvolatile memory in the PortMaster.

erase all-flash | comos | configuration

erase file *String*

erase partition *Number*

all-flash	Erases all the nonvolatile memory in the PortMaster, including the ComOS.
comos	Removes the PortMaster ComOS, after which you can no longer boot from Flash RAM.
configuration	Erases configuration data, so that after the next reboot the PortMaster will be configured to the factory defaults.

<i>file</i>	Erases a specified file from nonvolatile memory.
<i>String</i>	The name of the file to be erased; see "show files" on page 3-24 for file names.
<i>partition</i>	Use this keyword only when told to do so by Livingston Technical Support.
<i>Number</i>	A partition number from 0 to 7.

### Usage



**Caution** – Be very careful when you use this command. Refer to the *Configuration Guide for PortMaster Products* for troubleshooting information.

It may take up to a minute for the erasure to finish; wait until it is over before issuing any other commands.

### Example

This example erases the configuration information stored in Flash RAM, restoring the PortMaster to factory defaults.

```
Command> erase configuration
Successfully erased FLASH configuration
```

### Console

This command sets the port as the PortMaster system console. System messages sent to this port can be displayed on an attached device such as a terminal.

```
set console [S0|p0]
```

<i>S0</i>	Any asynchronous port.
<i>p0</i>	Parallel port, to have console messages sent to an attached parallel printer.

## Usage

If no port is specified, the current connection becomes the console. The command "reset console" removes the console, and "save console" saves the console setting to nonvolatile memory.

## Example

Command> set console s0  
Setting CONSOLE to port S0

## See Also

save console - page 3-17  
reset console - page 3-19  
set debug - page 3-12

## TFTP

This command retrieves a file of configuration commands from a host using the Trivial File Transfer Protocol (TFTP).

*tftp get Ipaddress String*

<i>Ipaddress</i>	IP address or host name of the TFTP server.
<i>String</i>	The name of the file to be retrieved from the TFTP server.

## Usage

See your system administration manual for instructions on how to set up a TFTP server on your host; "put" is not yet available.

## Example

Command> tftp get 192.168.1.70 pm2.cfg  
Requesting tftp of pm2.cfg from host 192.168.1.70 (192.168.1.70)  
Output from configuration commands in file /tftpboot/pm2.cfg appears here.  
tftp complete



## Save

This command saves configuration information to the nonvolatile memory of the PortMaster.

```
save Ether0 | S0 | W1 | all | global | console | filter | host | location | netmask | p0 |
route | snmp | user | ospf
```

<i>Ether0</i>	An Ethernet interface	see Chapter 5
<i>S0</i>	Any asynchronous port	see Chapter 6
<i>W1</i>	Any synchronous port	see Chapter 7
<i>all</i>	All configuration changes	
<i>global</i>	Global configuration changes	see Chapter 4
<i>console</i>	Console port setting	see page 3-15
<i>filter</i>	Filter configuration changes	see Chapter 14
<i>host</i>	Host Table settings	see Chapter 15
<i>location</i>	Location Table settings	see Chapter 13
<i>netmask</i>	Netmask Table settings	see Chapter 4
<i>p0</i>	Parallel port settings	see Chapter 8
<i>route</i>	Static Route Table settings	see Chapter 15
<i>snmp</i>	SNMP Table settings	see Chapter 4
<i>user</i>	User Table settings	see Chapter 12
<i>ospf</i>	OSPF configuration	see Chapter 11

## ***Usage***

After making changes to configuration parameters or tables, you can save the changes individually using the “save” command with a specific keyword, or you can use the “save all” command to save all changes. Some configuration changes require that you reboot before the changes become effective, as noted.

## ***Example***

```
Command> save all
Saving global configuration
Saving ports
User table successfully saved
Hosts table successfully saved
Static route table successfully saved
Location table successfully saved
SNMP table successfully saved
Filter table successfully saved
New configurations successfully saved.
```

## ***See Also***

show files - page 3-24  
set debug - page 3-12

## Reset

After making any changes to port configuration, you must reset PortMaster ports to make the changes take effect.

`reset S0 | W1 | all | console | dialer | p0 | Handle | ospf`

<i>S0</i>	Any asynchronous port.
<i>W1</i>	Any synchronous port.
<i>all</i>	Resets all ports.
<i>console</i>	Removes the current console setting, if any.
<i>dialer</i>	Checks all active interfaces against the location table and creates, destroys, or times out interfaces as needed. This command manually initiates a reset that is normally a background process.
<i>p0</i>	The parallel port.
<i>Handle</i>	"n" followed by a number (no space) from the first column of "show netconns," see page 3-34.
<i>ospf</i>	Removes the old MD5 authentication key numbers and secrets, and resets all active neighbors to use the new key numbers and secrets.

## Usage

Resetting a port causes data terminal ready (DTR) to be held low for 500 milliseconds, then keeps it down for 10 seconds or until data carrier detect (DCD) drops, whichever occurs first. Ports are reset automatically when a connection drops. You can reset specific asynchronous or synchronous ports, or all the ports, by selecting the appropriate keyword.

## Example

Command> reset s0  
Resetting port S0



### ***See Also***

save console - page 3-17  
set console - page 3-15  
show netconns - page 3-34

## ***Sysname***

This command sets the system name used for the SNMP sysname, IPX Service Advertising Protocol (SAP), Challenge Handshake Authentication Protocol (CHAP), and the command prompt.

set sysname *String*

*String*                      A name of up to 16 characters. No default.

### ***Usage***

The command prompt will display the system name instead of "Command" on PortMasters that have the system name set.

### ***Example***

```
Command> set sysname pm2  
System Name Successfully changed  
pm2>
```

### ***See Also***

set chap - page 4-13  
set snmp - page 4-28

## Examples of the Show Commands

Examples and explanations of the show commands are given below. For show commands relating to the use of the OSPF routing protocol, see Chapter 11.

### Show All

Shows a summary status of all ports.

show all

### Example

Command> show all

Local Addr: goto.edu (192.168.96.6)

Default Host: server.edu.com

Gateway: goto-90-gw.edu.com

Netmask: 255.255.255.0

DNS Server: server.edu.com

Domain: edu.com

Port	Speed	Mdm	Host	Type	Status	Input	Output	Pend
S0	9600	on	server	Login	USERNAME	0	30	0
S1	115200	on	server	Login/	USERNAME	218	47343	0
S2	115200	off	-	Login/	USERNAME	47343	218	0
S3	115200	off	server	Login/	USERNAME	17	18	0
S4	115200	on	server	Login/	USERNAME	0	18	0
S5	57600	on	-	Login/	IDLE	0	0	0
S6	9600	off	server	Login/	USERNAME	18	18	0
.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.
P0	-	-	server	Device	IDLE	0	0	0

### Explanation

Port                      Port name.

Speed                    Baud rate of port in bps. Default is 9600.

Mdm                      Modem control setting. Default is "off".

Host	The login or device host for the port.
Type	Type of operation for which port is configured.
Status	Refer to the chapter on how portmasters work in the <i>Configuration Guide for PortMaster Products</i> .
Input	Input bytes to this port since last reboot.
Output	Output bytes from this port since last reboot.
Pend	Pending output bytes on this port.

## **Show ARP**

Shows ARP tables for the specified Ethernet or Frame Relay interface.

`show arp Interface`

<i>Interface</i>	The interface specification: For example, ether0, frm1, or frmw1.
------------------	---

### **Example**

```
Command> show arp ether0
10.0.0.3 at 00:00:c0:cb:a6:44
10.0.0.10 at 00:00:c0:6f:19:5c
```

### **Explanation**

For Ethernet interfaces, shows the mapping from IP address to MAC address in the ARP cache.

For Frame Relay, shows the mapping from IP address to data link connection identifier (DLCI), and includes the Q.922 value for the DLCI.



## Show Ether0

Shows configuration values for Ethernet interface.

`show Ether0`

Command> show ether0

```

Ethernet Status:  IP - Enabled           IPX - Enabled
Interface Addr:   pm2.edu.com (192.168.96.6)
Netmask:          255.255.255.0
Broadcast Address: 192.168.96.0
IPX Network:      FEEDFEFE
IPX Frame Type:   ETHERNET_802.3
Ethernet Address: 00:c0:05:01:06:20
Routing:          Broadcast, Listen (On)
Input Filter:
Output Filter:

```

### Explanation

Ethernet Status	Shows IP and IPX protocols enabled for the Ethernet port.
Interface Addr	The IP address for the Ethernet interface.
Netmask	The netmask used on the network.
Broadcast Address	The IP address used as the local broadcast address.
IPX Network	The IPX network segment address.
IPX Frame Type	The IPX frame type that identifies the encapsulation method used on the IPX interfaces.
Ethernet Address	The Ethernet hardware MAC address.
Routing	<p>Broadcast - the PortMaster broadcasts route information on the local Ethernet.</p> <p>Listen - the PortMaster listens for route information from other routers on the local Ethernet.</p>

Input Filter	The name of the input filter attached to the Ethernet interface.
Output Filter	The name of the output filter attached to the Ethernet interface.

## Show Files

Displays file names and length, and how much of the 128-KB (PortMaster models other than PM-3), or 384-KB (PM-3) Flash configuration file system is in use.

show files

### Example

Command> show files

File Name	Length
-----	-----
confdata	312
config	12122
passwd	328
location	348
script	143
snmp	41
filters	416
ipxfilt	104
sapfilt	104
modem	175
-----	-----
Total	14093

## *Explanation*

<b>File</b>	<b>Contents</b>
confdata	Extensions to port configurations, ether1, RADIUS
config	Global configuration and standard port configurations
passwd	User Table
hosttab	Host Table
routes	Static Route Table
location	Location Table, except for chat scripts
script	Chat scripts for the Location Table
snmp	SNMP
filters	IP filters
listnames	ChoiceNet list IDs contained in filters
ipxfilt	IPX filters
sapfilt	SAP filters
netmasks	Static Netmask Table
modem	Modem Table



## **Show Global**

Shows system-wide configuration values.

show global

### **Example**

```
Command> show global
System Name:  -
Default Host: server.edu.com
Alternate Hosts:  -
IP Gateway:  192.168.96.2
Gateway Metric:  1
Default Routes:  Quiet (Off)
Name Service:  DNS
Name Server:  server.edu.com
Domain:  edu.com
Telnet Access Port:  23
Loghost:  0.0.0.0
Assigned Address:  0.0.0.0
RADIUS Server:  server.edu.com
Alternate Server:  0.0.0.0
Accounting Server:  server.edu.com
Alt. Acct. Server:  0.0.0.0
ChoiceNet Server:  192.168.96.9
Alt. ChNet Server:  0.0.0.0
```

### **Explanation**

File	Contents	
System Name	SNMP system name.	- see page 3-20
Default Host	The host used for login services.	- see page 4-5
Alternate Hosts	Alternate host.	- see page 4-5

IP Gateway	The default route gateway address.	- see page 4-8
Gateway Metric	Metric for the default route.	- see page 4-8
Default Routes	Default routing options for all interfaces.	- see page 4-9
Name Service	The service—Network Information Service (NIS) or Domain Name Service (DNS)—used for resolving host names.	- see page 4-6
Name Server	The name server IP address or host name.	- see page 4-7
Domain	The domain name used with host name lookups.	- see page 4-7
Telnet Access Port	The administrative Telnet port.	- see page 4-4
Loghost	The host to which syslog messages are sent.	- see page 4-5
Assigned Address	The base address in the assigned address pool.	- see page 4-10
RADIUS Server	The IP address or host name of the server running the RADIUS authentication service.	- see page 4-18
Alternate Server	The alternate RADIUS authentication server.	- see page 4-19
Accounting Server	The RADIUS accounting server.	- see page 4-20
Alt. Acct. Server	The alternate RADIUS accounting server.	- see page 4-20
ChoiceNet Server	The ChoiceNet server.	- see page 4-21
Alt. ChNet Server	The alternate ChoiceNet server.	- see page 4-19

## Show Ipxroutes

Shows the IPX routing table.

show ipxroutes

### Example

Command> show ipxroutes

Network	Gateway	Flag	Met	Ticks	Interface
00001701	95C60100:0080AD06A39A	ND	2	2	ether0
95C60100	95C60100:00C005010923	NL	1	1	ether0

### Explanation

Network                      Destination IPX network.

Gateway                     Gateway IPX address.

Flag                         H - A host route  
                              N - A network or subnet route  
                              S - A static route  
                              L - A route to a directly attached network or host  
                              D - A dynamic route  
                              C - A route that has been recently changed and not yet broadcast  
                              O - An obsolete route, scheduled for deletion

Met                          Metric - Hop count to the remote destination.

Ticks                        The time it takes to send the packet to the destination network in 50-ms increments.

Interface                    The interface to the IPX network.



## Show ISDN

Shows the status of the ISDN ports.

show isdn

### Example

Command> show isdn

D	Ports	State	Change	Start	Up	Down	Time	Sess	In	Out	Err
0	S0/S1	Active	12days	2	2	0	0	7	232435	242617	0
1	S2/S3	Active	23:59	4	4	0	0	84	234492	243629	2
2	S4/S5	Active	12days	2	2	0	0	32	225771	236417	0
3	S6/S7	Active	12days	2	2	0	0	10	215027	224158	0
4	S8/S9	Active	6days	4	4	0	0	8	233815	242951	0
5	S10/S11	Active	12days	2	2	0	0	84	227767	237771	0
6	S12/S13	Active	23:56	4	4	0	0	1	222791	231927	0
7	S14/S15	Active	12days	2	2	0	0	1	219985	230626	0
8	S16/S17	Active	12days	2	2	0	0	0	213797	222935	0
9	S18/S19	Line Down	12days	0	0	0	0	0	0	0	0

### Explanation

D	D channel associated with active session.
Ports	ISDN port numbers on the PortMaster.
State	Line status.
Change	Time since last change in status.
Start	Number of times NT1 has attempted to bring up link.
Up	Number of times a link has gone to UP status.
Down	Number of times a link has gone to DOWN status.
Time	Number of times D channel has timed out attempting to bring up the link.

Sess	Number of times PortMaster has received a connect message from the switch.
In	Number of input ISDN frames on B channel.
Out	Number of output ISDN frames on B channel.
Err	Number of cyclic redundancy check (CRC), abnormal terminations, overrun, bad byte count (bbc), and lost frame errors.

## Show Line0

Shows the status of a T1 or E1 PRI line on a PortMaster 3.

`show Line0`

*Line0*                      line0 or line1.

## T1 Example

Command> show line0

----- line0 - T1 Primary Rate ISDN -----			
Status: UP	Framing: ESF	Encoding: B8ZS	PCM: u-law
Receive Level:	+2dB to -7.5dB		
Alarms	Violations		
-----			
Blue	0	Bipolar	102
Yellow	0	CRC Errors	1
Receive Carrier Loss	0	Multiframe Sync	9
Loss of Sync	0		

**E1 Example**

Command> show line0

```

----- line0 - E1 Primary Rate ISDN -----
Status: UP          F1   Framing: CRC4   Encoding: HDB3   PCM: a-law

Alarms                                     Violations
-----
Remote Alarm                                0  Bipolar                                201
Receive Carrier Loss                        0  CRC4                                  0
Loss of Sync                              0  E-bit                                0
                                           FAS bit                             0

```

**Explanation**

Status	Status of T1 or E1 PRI line.	
F State - E1 only (F1 in example)	PRI layer 1 state at user side of interface. Range: F0 to F6. F0 = Power off, no signal. F1 = Operational. F2 to F5 = Failure conditions FC1 to FC4. F6 = Power on, no signal.	
Framing	Framing format in use.	- see page 10-6
Encoding	Encoding method in use.	- see page 10-7
PCM	Pulse Code Modulation method in use.	- see page 10-7
Receive Level	Signal strength on the line.	
T1 Alarms	Blue - Unframed all ones signal. Yellow - D4 bit2, D4 12th F-bit, or extended superframe (ESF) mode (framing) signal. Receive Carrier Loss - Loss of carrier signal. Loss of Sync - Device loss of synchronization signal.	
E1 Alarms	Remote Alarm - Remote is in alarm state. Receive Carrier Loss - Loss of carrier signal. Loss of Sync - Device loss of synchronization signal.	



T1 Violations	Bipolar - Consecutive bipolar violations of same polarity. CRC Errors - Errors in CRC6 code words (ESF framing), or in the Ft framing bit position (D4 framing). Multiframe Sync - Multiframe received out of synchronization.
E1 Violations	Bipolar - Consecutive bipolar violations of same polarity. CRC4 - Errors in the CRC4 code words (CRC4 framing). E-bit - CRC4 error bits. FAS bit - Errors in the frame alignment signal (FAS) code words (FAS framing).

## Show Memory

Shows system memory use.

```
show memory
```

### Example

```
Command> show memory
System memory 1048576 bytes - 860552 used, 188024 available
64:1 96:1 1152:1 128:1 640:2 144:3 80:1 16:10 160:0 208:1 32:11
System nbufs 1400 - 137 used, 1263 available
```

### Explanation

System Memory (values from example)

First value (1048576 bytes)	Total memory installed in the system.
Second value (860552 bytes)	Highest amount of system memory ever used by system.
Third value (188024 bytes)	Memory remaining in the free large heap. If this value is greater than zero, the system has never run out of memory.

64:1 96:1 1152:1, and so on.

Memory fragments, *Size:Number*.

*Size* - size in bytes (example 64).

*Number* - number of fragments of that size (example 1).

To determine the total free memory, add the free large heap to the sum of the fragments.

When memory is used, memory fragments are used before the free large heap.

System nbufs

Network buffers showing total buffers, buffers in use by network packets, and available buffers. Each buffer is 128 bytes.

System bbufs

Equivalent to system nbufs, but buffer size is increased to 1600 bytes. Seen on PortMaster Internetwork Routers.

## Show Modules

The PortMaster ComOS is divided into functional modules. This command shows the names and sizes of the modules that are loaded into the currently running ComOS. Optional functions, such as the SNMP Table, that are not loaded are not displayed.

show modules

### Example

Command> show modules

Module	State	Start	Len
0 SNMP	HEAP	8f48	23516
1 IPX	HEAP	51bc	15756
2 INIT	HEAP	0	20924
3 SYNC	HEAP	3d1dc	14952
4 ISDN	HEAP	f028	139076
5 ISDN-NORTH-AM	HEAP	30f6c	14380
6 ISDN-EUROPE	HEAP	34798	29964
7 ISDN-JAPAN	HEAP	3bca4	5432

### ***Explanation***

Module	The function module.
State	Module state: HEAP The module is disabled. ACT The module is active.
Start	Memory location of start of the module.
Len	The length (size) of the module in bytes.

### ***Show Netconns***

Shows the TCP and UDP network sockets open on the PortMaster.

show netconns

### ***Example***

Command> show netconns

Hnd	Recv-Q	Send-Q	Local Address	Foreign Address	(state)
706	0	0	goto.edu.com.1011	server.edu.com.513	CONNECTING
615	0	0	goto.edu.com.23	0.0.0.0	LISTEN
588	0	2	goto.edu.com.23	xterm1.edu.com.1389	ESTABLISHED
552	0	0	goto.edu.com.1643	0.0.0.0	LISTEN
120	0	0	goto.edu.com.1011	server.edu.com.1642	ESTABLISHED
76	0	0	goto.edu.com.1030	server.edu.com.53	UDP
10	0	0	goto.edu.com.67	0.0.0.0	UDP

### ***Explanation***

Hnd	Network handle.
Recv-Q	Number of packets in receive queue.
Send-Q	Number of packets in send queue.



Local Address	Local host name or IP address with TCP or UDP port number.
Foreign Address	Foreign host name or IP address with TCP or UDP port number.
(state)	TCP connection state, or "UDP" for UDP sockets.

### ***See Also***

reset Handle - page 3-19

## ***Show Netstat***

Shows network interface statistics.

```
show netstat
```

### ***Example***

```
Command> show netstat
```

Name	Ipkts	Ierrs	Opkts	Oerrs	Collis	Resets	Queue
ether0	207757	0	215161	0	223	0	0

### ***Explanation***

Name	Interface name.
Ipkts	Number of packets received since reboot.
Ierrs	Number of input errors since reboot.
Opkts	Number of packets sent since reboot.
Oerrs	Number of output errors since reboot.
Collis	Number of output collisions since reboot.
Resets	Number of resets on the interface since reboot.
Queue	Number of packets waiting to be sent from the interface.

## Show Routes

Shows the IP routing table. See the information on routing concepts in the *Configuration Guide for PortMaster Products*.

show routes

### Example

Command> show routes

Destination	Gateway	Flag	Met	Interface
-----	-----	-----	-----	-----
0.0.0.0	192.168.96.2	NS	1	ether0
192.168.96.0	192.168.96.6	NL	1	ether0
192.168.1.0	192.168.96.2	ND	2	ether0
192.168.2.0	192.168.96.2	ND	3	ether0
192.168.3.0	192.168.96.2	ND	3	ether0
192.168.23.0	192.168.96.2	ND	3	ether0
192.168.24.0	192.168.96.2	ND	3	ether0
192.168.100.0	192.168.67.33	NS	2	Unknown

### Explanation

Destination	IP address of the host or network to which packets will be sent.
Gateway	The IP address of the directly connected host through which packets will be forwarded to the destination.
Flag	<ul style="list-style-type: none"><li>H - A host route</li><li>N - A network route</li><li>S - A statically learned route, either configured and permanent or temporary via a RADIUS Framed-Route</li><li>L - A route attached to a local interface</li><li>D - A dynamically learned route, via RIP or OSPF</li><li>C - A changed route that has yet to be advertised to all interfaces</li><li>O - An obsolete route scheduled for deletion</li></ul>

Met	Metric - Hop count to the remote destination.
Interface	The interface used for forwarding packets to the gateway for the destination.

## Show S0

Shows the current status and configuration for the port. This command can be used for asynchronous, synchronous, ISDN, and parallel ports on the PortMaster.

```
show S0|W1|p0
```

### Example

Command> show s0

```
----- Current Status - Port S0 -----
      Status:  USERNAME
      Input:   62                Parity Errors:  0
      Output: 652                Framing Errors: 22
      Pending: 0                Overrun Errors: 0
Modem Status: DCD+ CTS+
      Active Configuration  Default Configuration(* = Host Can Override)
-----
      Port Type:  Login        Login (Security)
Login Service:  PortMaster    PortMaster
Baud Rates:    115200          115200,115200,115200
Databits:      8              8
Stopbits:      1              1
Parity:         none          none
Flow Control:  None          None
Modem Control: off           off
Hosts:          tm            default
Terminal Type:
Login Prompt:   $hostname login:
Idle Timeout:   40
```



## Explanation

Status	Refer to the information on port status in the <i>Configuration Guide for PortMaster Products</i> .
Input/Output/ Pending	Number of bytes input, output, or pending since last reboot.
Errors	Number of Parity, Framing, or Overrun errors since last reboot.
Modem Status	The plus signs on DCD and CTS indicate that the DCD and CTS signals on the port are asserted (high).  For modem status information for ISDN lines, refer to the ISDN connection chapter in the <i>Configuration Guide for PortMaster Products</i> .
Active Configuration	The configuration currently active on the port.
Default Configuration	The configured port parameters, including available alternatives.
Port Type	The port type - login, device, or network. (Security) indicates that security has been set for the port. See page 6-21.
Login Service	Type of login service selected - PortMaster, rlogin, telnet, or netdata.
Baud Rates	The port speed in bits per second (bps).
Databits	The number of databits per byte.
Stopbits	The number of stopbits per byte.
Parity	The parity checking used.
Flow Control	Flow control used - Software (Xon/Xoff), hardware (RTS/CTS), or none.
Modem Control	Modem carrier detect signal setting.
Hosts	Active configuration shows the current host accessed.
Terminal Type	The terminal type selected.
Login Prompt	The user login prompt.
Idle Timeout	The idle time in minutes before a port is reset.

## Show SAP

Shows the active Service Advertising Protocol (SAP) table.

show sap

### Example

Command> show sap

Server	Svc	Network	Host	Sock	Hops	Interface
080009A8CEAA80CGNPiA8CEA	30C	COA86000:	080009A8CEAA:	400C	2	ether0
NOVELL	4	00001701:	000000000001:	0451	2	ether0

### Explanation

Server	The IPX server
Svc	The IPX service available on the server
Network	The IPX network number of the destination
Host	The IPX address of the destination
Sock	The IPX socket number of the destination
Hops	The hop count to the remote destination
Interface	The interface used for sending packets

## Show Sessions

Shows current use of ports.

show sessions

### Example

Command> show sessions

Port	User	Host/Inet/Dest	Type	Dir	Status	Start	Idle
S0	-	tm	Login	In	USERNAME	0	0
S1	-	tm	Device	Out	ESTABLISHED	1:23	1:23
S2	-	tm	Device	Out	ESTABLISHED	3	3
S3	-	-	Log/Net	In	USERNAME	0	0
S4	-	tm	Login	In	USERNAME	0	0
S5	-	tm	Log/Net	In	IDLE	0	0
S6	-	tm	Login	In	USERNAME	0	0
S7	-	tm	Login	In	USERNAME	0	0
S8	-	tm	Login	In	USERNAME	0	0
S9	-	tm	Login	In	USERNAME	0	0
S10	-	-	Netwrk	Out	IDLE	0	0

### Explanation

Port	Port number.
User	Username of the user logged in on the port.
Host/Inet/Dest	Host for login users or host devices, or address of network users.
Type	Type of operation for which port is configured, or the active type for established ports.
Dir	Direction that the connection was established, inbound or outbound.
Status	Refer to the chapter on how portmasters work in the <i>Configuration Guide for PortMaster Products</i> .
Start	Time in minutes since the session started.
Idle	Time in minutes that the session has been idle.



## Show Table

Displays the contents of tables stored in the memory of the PortMaster. Each command is covered in more detail in the chapter for that table.

show table filter | host | location | modem | netmask | snmp | user

show table filter	See below and page 14-4
show table host	See page 15-10
show table location	See page 13-4
show table modem	See page 6-40
show table netmask	See page 4-23
show table snmp	See page 4-27
show table user	See page 12-4

### Example

To see a list of filters in the Filter Table:

Command> show table filter

next.in	sapo.out	ether.in	inter.in	general.in
general.out	hosts.in			

To see the contents of a specific filter:

Command> show filter inter.in

```
1 deny 192.168.200.0/24 0.0.0.0/0 ip
2 permit 0.0.0.0/0 0.0.0.0/0 tcp estab
3 permit 0.0.0.0/0 0.0.0.0/0 udp dst eq 53
4 permit 0.0.0.0/0 0.0.0.0/0 tcp dst eq 53
5 permit 0.0.0.0/0 0.0.0.0/0 tcp dst eq 25
```



This chapter describes how to use the Command Line Interface for global configuration. Detailed command definitions follow a command summary table. Detailed command definitions and summary tables are also provided for RADIUS, ChoiceNet, Netmask, and SNMP configuration commands.

The Command Line Interface can be used to configure global settings, allowing you to set default and alternate hosts, set gateways and metrics, set the name service used by the PortMaster, and set the administrative password of the PortMaster.

## *Displaying Global Settings*

To display information about your configuration, use the following global commands:

- show all - see page 3-21
- show global - see page 3-26

For general information about using the Command Line Interface, refer to Chapter 2, "Introduction."

## *Configuring Global Settings*

To configure global settings:

1. At the command line, enter your global settings, as in the following examples:

```
Command> set domain edu.com  
Command> set telnet 23  
Command> set host 172.16.200.1
```



As you press [Enter] following each command, the PortMaster responds by echoing the configuration change you have made. For example:

```
Command> set telnet 23
Setting Telnet Administration port to 23
```

For a description of each command, refer to “Description of Global Commands” on page 4-3.

2. When you finish configuring the global settings, enter the “save global” command to write your configuration changes to the nonvolatile memory of the PortMaster, as follows:

```
Command> save global
```

“save all” can also be used.

## Summary of Global Commands

Table 4-1 contains the global configuration commands that affect the entire PortMaster.

Table 4-1 Global Configuration

Command Syntax	
show all	- see page 3-21
show global	- see page 3-26
set password <i>Password</i>	
set telnet <i>Tport</i>	
set host [1 2 3 4] <i>Ipaddress</i>	
set loghost <i>Ipaddress</i>	
set namesvc dns nis	
set nameserver [2] <i>Ipaddress</i>	
set domain <i>String</i>	
set gateway <i>Ipaddress</i> [ <i>Metric</i> ]	

Table 4-1 Global Configuration (Continued)

Command Syntax
set default on   off   broadcast   listen
set assigned_address <i>Ipaddress</i>
set reported_ip <i>Ipaddress</i>
set netbios on   off
set pap on   off
set chap on   off
set ipx on   off
set maximum pmconsole <i>Number</i>
set serial-admin on   off
set isdn-switch ni-1   dms-100   5ess   5ess-ptp
set isdn-switch net3   vn2   vn3   vn4   1tr6   ntt   kdd

## Description of Global Commands

These commands are used to configure everything on the PortMaster except for interfaces and tables.

### Password

This command sets the PortMaster administrative password.

set password [*Password*]

*Password*                      String of up to 16 characters. Default is no password.

### Usage

When shipped, the PortMaster has no password. You must enter a password to protect the PortMaster administrative features. Using the command "set password" followed by [Enter], erases the administrative password.

### ***Example***

Command> set password supercalifragil  
!root password changed from to supercalifragil

## ***Telnet***

This command sets the Telnet administrative port.

set telnet *Tport*

*Tport*                      Telnet administrative port. Default is 23.

### ***Usage***

This command allows the administrator to use the Telnet protocol to maintain the PortMaster. The value is a number from 0 to 65535. If set to 0, the PortMaster disables the Telnet administration function. Ports numbered 10000 through 10100 are reserved and should not be used for this function.

### ***Example***

Command> set telnet 23  
Setting Telnet Administration port to 23

### ***See Also***

set maximum pmconsole - page 4-14  
set serial-admin - page 4-15  
telnet - page 3-12



## Host

This command sets the default IP address or host name for login sessions.

`set host [1|2|3|4] Ipaddress`

*1|2|3|4*

Can be used to specify alternate hosts, with the primary host being 1, the secondary host 2, and so on up to 4. If omitted, the default is 1.

*Ipaddress*

IP address or host name.

## Usage

If you do not want the PortMaster to provide login or host device service, this parameter should not be set. Setting to 0.0.0.0 removes the entry.

## Example

Command> `set host 172.16.200.1`

Default host changed from to 172.16.200.1

## See Also

set S0 host - page 6-29

set S0 service\_login - page 6-27

set S0 service\_device - page 6-28

set user host - page 12-9

set user service - page 12-10

## Loghost

This command sets the IP address or name of the host to which the PortMaster sends syslog messages.

`set loghost Ipaddress`

*Ipaddress*

Loghost IP address or host name

## *Usage*

Syslog messages are sent as syslog facility "auth" and priority "info" (auth.info). Do not use a loghost at the far end of an on-demand location, as doing so might keep the connection up.

Setting the IP address to 0.0.0.0 disables the syslog at the PortMaster. This change requires a reboot to become effective.

## *Example*

```
Command> set loghost 192.168.200.2  
Loghost changed from 0.0.0.0 to 192.168.200.2
```

## *Nameservice*

This command sets the service (NIS or DNS) used for resolving host names.

```
set namesvc dns | nis
```

dns	Use Domain Name Service (DNS) for host name lookups.
nis	Use Network Information Service (NIS) for host name lookups.

## *Usage*

A name service should be selected only if users will be prompted for hosts that require a name service for resolution to an IP address, or to display host names instead of addresses in the administrative Command Line Interface.

## *Example*

```
Command> set namesvc dns  
Name Service changed from NIS to DNS
```

## *See Also*

set nameserver - page 4-7  
set domain - page 4-7

## Nameserver

This command sets the name server IP address or host name.

set nameserver [2] *Ipaddress*

2                      Set an alternate name server.

*Ipaddress*            IP address or host name.

### Usage

Sets the server used for DNS or NIS host name lookups.

### Example

Command> set nameserver 172.16.200.2

Name Server changed from 0.0.0.0 to 172.16.200.2

### See Also

set domain - page 4-7

set namesvc - page 4-6

## Domain

This command sets the domain name to use with host name lookups.

set domain *String*

*String*                Domain name

### Usage

Enter the domain name of your network in this parameter, after you have selected NIS or DNS as your name service, and have set a name server address.



### **Example**

```
Command> set domain edu.edu  
Domain changed from  to edu.edu
```

### **See Also**

set namesvc - page 4-6  
set nameserver - page 4-7

## **Gateway**

This command sets the default route gateway address.

```
set gateway Ipaddress [Metric]
```

*Ipaddress*                      IP address.

*Metric*                        Metric for the default route, between 1 and 15. Default is 1.

### **Usage**

The route gateway is the address of a router of last resort to which packets are sent when the PortMaster has no routing information for a packet. The gateway can never be the address of a PortMaster interface.

### **Example**

```
Command> set gateway 172.16.200.1 1  
Gateway changed from 0.0.0.0 to 172.16.200.1, metric = 1
```

### **See Also**

show routes - page 3-36

## Default Routing

This command sets default routing (RIP) options for all interfaces.

`set default on | off | broadcast | listen`

on	The PortMaster sends and listens for default route information.
off	The PortMaster neither sends nor listens for default route information. This is the default.
broadcast	The PortMaster sends default route information, if it has a default route.
listen	The PortMaster listens for default route information.

### Usage

When default routing is turned on, the PortMaster listens for default route information in RIP messages, and advertises a default route to RIP if the PortMaster has one.

### Example

Command> set default on

Default routing changed from off (no\_broadcast,no\_listen) to on (broadcast,listen)

### See Also

show global - page 3-26

## ***Assigned Base Address***

This command sets the base IP address of the assigned address pool.

```
set assigned_address Ipaddress
```

<i>Ipaddress</i>	Base IP address assigned
------------------	--------------------------

### ***Usage***

The PortMaster allocates a pool of addresses starting at the assigned base address and counting up. The total number of addresses is equal to the number of ports configured for network dial-in. If someone dials in and requests an unused address from the pool, that is assigned. If someone dials in and requests any address, the next address from the pool is assigned. If someone disconnects, their address is placed at the end of the pool for reuse.

### ***Example***

```
Command> set assigned 172.16.200.220  
First Assigned address changed from 0.0.0.0 to 172.16.200.220
```

### ***See Also***

set user destination - page 12-12



## Reported IP

This command is used to report an IP address different from the Ether0 address during PPP negotiation and Serial Line Internet Protocol (SLIP) startup.

```
set reported_ip Ipaddress
```

<i>Ipaddress</i>	IP address
------------------	------------

## Usage

Any IP address may be used with this command. This feature is valuable for sites that require a number of PortMaster devices to appear as a single IP address to the outside world. With PPP, this information is placed in the startup message, and the PortMaster devices report this address to the outside. With SLIP, this information is placed in the startup message.

## Example

```
Command> set reported_ip 172.16.200.1  
Reported IP address changed from 0.0.0.0 to 172.16.200.1
```

## See Also

set Ether0 address - page 5-3  
set user local-ip-address - page 12-13

## NetBIOS

This command is used to set the NetBIOS parameter for use with IPX.

```
set netbios on | off
```

on	When the NetBIOS parameter is on, the PortMaster broadcasts type 20 packets.
off	When the NetBIOS parameter is off, the type 20 packets are not broadcast across the router. The default is off.

## Usage

Full NetBIOS protocol compliance requires that this command be set to "on," and the PortMaster will then propagate and forward type 20 broadcast packets across your IPX network. System administrators should be aware of this before changing from the default of "netbios off."

## Example

```
Command> set netbios on
NetBIOS changed from off to on
```

## See Also

set ipx - page 4-13

## PAP

This command provides the choice of accepting either Password Authentication Protocol (PAP) or CHAP authentication for dial-in users, or CHAP only.

set pap on | off

- |     |  |
|-----|--|
| on  | If PPP is detected on a port, ask user to authenticate with PAP. If that is refused, ask to authenticate with CHAP. Default is on. |
| off | Do not request or accept PAP authentication.   |

## Usage

With PAP set to "off," the default is to support CHAP. If you do not want to support CHAP authentication, you must disable CHAP (see page 4-13).

## Example

```
Command> set pap off
PAP authentication changed from on to off
```

## See Also

set chap - page 4-13  
show global - page 3-26

## CHAP

This command provides the choice of supporting or disabling CHAP authentication for dial-in users.

set chap on | off

on CHAP authentication is supported. This is the default.

off CHAP authentication is disabled.

### Usage

If you do not want to support CHAP authentication, you must set CHAP to "off." With both PAP and CHAP off, the only authentication method allowed is a username/password login.

### Example

Command> set chap off  
CHAP authentication changed from on to off

### See Also

set pap - page 4-12  
show global - page 3-26

## IPX

This command allows you to enable or disable PortMaster support for the Novell Internet Packet Exchange (IPX) protocol.

set ipx on | off

on Enables support for the IPX protocol.

off Disables support for the IPX protocol. This is the default.



## Usage

To enable support for IPX, you must use this command. After changing the IPX setting, you must use the "save all" command and reboot the PortMaster before the change takes effect.

## Example

Command> set ipx on  
IPX will be enabled after next reboot

## See Also

set Ether0 ipxframe - page 5-7  
set Ether0 ipxnet - page 5-6  
set S0 ipxnet - page 6-37  
set W1 ipxnet - page 7-8  
set location ipxnet - page 13-10  
show modules - page 3-33

## Maximum PMconsole

This command sets the maximum number of concurrent PMconsole GUI connections into the PortMaster.

set maximum pmconsole *Number*

*Number*

The maximum number of concurrent connections to allow.  
Default is 1, maximum is 10.

## Usage

The programs pmconsole, pminstall, pmreadconf, pmreadpass, pmcommand, and pmreset connect to TCP port 1643 on the PortMaster. If set to 2 or higher, more than one program can connect at the same time.



**Note** – If two or more PMconsole GUIs are used to configure the PortMaster at the same time, each might not see the change made by the others.

### ***Example***

Command> set maximum pmconsole 2

### ***See Also***

set serial-admin - page 4-15

set telnet - page 4-4

## ***Serial Admin***

This command enables or disables administrative logins using the serial ports of the PortMaster.

set serial-admin on | off

on	Enables administrative logins on serial ports. This is the default.
----	---

off	Disables administrative logins on serial ports.
-----	---

### ***Usage***

If administrative logins (!root) are disabled, you can still use port S0 (or C0) for !root login by setting the console DIP switch to the up position.

### ***Example***

Command> set serial-admin off

Serial Administration changed from on to off

## ISDN Switch

This command sets the switch provisioning for ISDN BRI connections to the PortMaster ISDN ports. For ISDN PRI switch settings, see page 10-5.

```
set isdn-switch ni-1 | dms-100 | 5ess | 5ess-ntp
```

```
set isdn-switch net3 | vn2 | vn3 | vn4 | 1tr6 | ntt | kdd
```

ni-1	National ISDN-1 (NI-1) compliant. This is the default.
dms-100	Northern Telecom DMS-100 Custom.
5ess	AT&T 5ESS Custom Multi-Point.
5ess-ntp	AT&T 5ESS Custom Point-to-Point.
net3	European ISDN standard (includes Swiss extensions).
vn2	France - Older switch.
vn3	France - Older switch.
vn4	France - Current National switch.
1tr6	Germany - Older switch.
ntt	Japan.
kdd	Japan.

### Usage

DMS-100 and 5ESS switches may have either switch-specific software or NI-1 software. When they have NI-1 software, you should use the NI-1 setting.

The switch provisioning information is obtained from your ISDN telephone service provider.



**Note** – Any change you make in the switch provisioning setting does not take effect until the PortMaster is rebooted.



## ***Examples***

For an AT&T 5ESS Custom Multi-Point switch with switch-specific software:

```
Command> set isdn-switch 5ess  
ISDN switch type set to ATT-5ESS  
Command> save all  
Command> reboot
```

For an AT&T 5ESS Custom Multi-Point switch with NI-1 software:

```
Command> set isdn-switch ni-1  
ISDN switch type set to NI-1  
Command> save all  
Command> reboot
```

## ***See Also***

set S10 spid - page 9-6  
set S10 directory - page 9-7

## RADIUS Client Configuration

The RADIUS commands in Table 4-2 configure the PortMaster to use a RADIUS server. RADIUS is consulted if a port is set for “security on” and a user is not found in the PortMaster User Table.

Table 4-2 RADIUS Client Configuration

Command Syntax
set authentication_server <i>Ipaddress</i>
set alternate_auth_server <i>Ipaddress</i>
set secret <i>String</i>
set accounting [2] <i>Ipaddress</i>

The following commands configure the PortMaster as a RADIUS client. For RADIUS server configuration information, see the *RADIUS Administrator's Guide*.

### Authentication Server

This command sets the primary RADIUS authentication server.

```
set authentication_server Ipaddress
```

*Ipaddress*

IP address or host name for a host running a RADIUS authentication server on UDP port 1645.

### Usage

For more information about setting up a RADIUS authentication server, refer to the *RADIUS Administrator's Guide*.

### Example

```
Command> set authentication_server 192.168.200.1  
Authentication Server changed from 0.0.0.0 to 192.168.200.1
```

### ***See Also***

set secret - page 4-19  
set accounting - page 4-20  
set alternate\_auth\_server - page 4-19  
set S0 security - page 6-21

## ***Alternate Authentication Server***

This command sets the alternate RADIUS authentication server, which is used if the primary server does not respond.

set alternate\_auth\_server *Ipaddress*

*Ipaddress*

RADIUS alternate authentication server IP address or host name.

### ***Usage***

This address must be different from that of the primary RADIUS authentication server.

### ***Example***

Command> set alternate 192.168.200.4  
Alternate Authentication Server changed from 0.0.0.0 to 192.168.200.4

### ***See Also***

set authentication\_server - page 4-18

## ***Secret***

This command sets the RADIUS shared secret.

set secret *String*

*String*

Shared secret, which has a maximum of 64 (ASCII printable only) characters.



## Usage

This value is used to encrypt the user's password in a RADIUS Access-Request, and must match the secret used by the RADIUS server.

## Example

```
Command> set secret expli7%QZixZZy7
Authentication Secret successfully changed
```

## See Also

set authentication\_server - page 4-18  
set S0 security - page 6-21

## Accounting

This command sets the RADIUS accounting server.

```
set accounting [2] Ipaddress
```

2

If present, sets the alternate accounting server instead of the primary.

*Ipaddress*

IP address of a host running a RADIUS accounting server on UDP port 1646.

## Usage

The accounting server daemon must be present on the host before the RADIUS accounting server will function correctly.

## Example

```
Command> set accounting 172.16.200.3
Accounting Server changed from 0.0.0.0 to 172.16.200.3
```

## See Also

set authentication\_server - page 4-18  
set secret - page 4-19

## ChoiceNet Client Configuration

The ChoiceNet commands in Table 4-3 configure the PortMaster to use a ChoiceNet server.

Table 4-3 ChoiceNet Client Configuration

Command Syntax
set choicenet [2] <i>Ipaddress</i>
set choicenet-secret <i>String</i>

The following commands configure the PortMaster as a ChoiceNet client.

### ChoiceNet

This command sets the IP address of the ChoiceNet server.

set choicenet [2] *Ipaddress*

2 If present, sets the alternate ChoiceNet server instead of the primary.

*Ipaddress* IP address or host name of the host running a ChoiceNet server on UDP port 1647.

### Usage

Additional documentation for ChoiceNet will be available shortly. Please contact Livingston for availability.

### Example

Command> set choicenet 192.168.200.6  
ChoiceNet Server changed from 0.0.0.0 to 192.168.200.6

### See Also

set choicenet-secret - page 4-22

## ***Secret***

This command sets the ChoiceNet secret.

`set choicenet-secret String`

*String*

Shared secret. Maximum length is 64 characters (ASCII printable only).

## ***Usage***

The shared secret is used to authenticate communications between the PortMaster and the ChoiceNet server.

## ***Example***

Command> set choicenet-secret vizkaRg76poj  
ChoiceNet Secret successfully changed

## ***See Also***

set choicenet - page 4-21



## Netmask Table Configuration

The Netmask Table commands in Table 4-4 configure the Netmask Table used for routing noncontiguous subnets. Use caution if configuring static netmasks. Read the information on setting static routes, in the *Configuration Guide for PortMaster Products*.

Table 4-4 Netmask Table Configuration

Command Syntax
show table netmask
save netmask
add netmask <i>Ipaddress Ipmask</i>
delete netmask <i>Ipaddress</i>

### Show Table Netmask

This command shows the status of active and static special netmasks.

```
show table netmask
```

### Usage

The Netmask Table also supports special netmasks, which override the consolidation of hosts into subnets and subnets into networks in RIP broadcasts.

### **Example**

Command> show table netmask

Active Netmasks:

Network	Netmask	Type
-----	-----	-----
172.17.0.0	255.255.255.0	Static
172.16.0.0	255.255.255.0	Dynamic

Stored Netmasks:

Network	Netmask
-----	-----
172.17.0.0	255.255.255.0

### **See Also**

save netmask - page 4-24  
add netmask - page 4-25  
delete netmask - page 4-26  
show routes - page 15-3

## **Save Netmask**

This command is used to save netmask configurations.

save netmask

### **Usage**

After changing the netmask configuration, this command saves the new netmask configuration. "save all" can also be used.

### **Example**

Command> save netmask  
New configurations successfully saved.

## See Also

show table netmask - page 4-23

add netmask - page 4-25

delete netmask - page 4-26

## Add Netmask

This command is used to add a static netmask to the Netmask Table. Use caution with the static Netmask Table. Refer to the *Configuration Guide for PortMaster Products* for more information.

add netmask *Ipaddress Ipmask*

*Ipaddress*                      The IP address of the network.

*Ipmask*                         The netmask IP used for the network.

## Usage

You can only have one netmask per network. The example shows the propagation of host routes for all dial-in clients with 192.168.8 addresses, instead of sending out a single network route for 192.168.8.0.



**Caution** – Be sure to add the netmask before setting any static routes that will be affected.

## Example

Command> add netmask 192.168.8.0 255.255.255.255  
New netmask successfully added

## See Also

show table netmask - page 4-23

delete netmask - page 4-26

save netmask - page 4-24



## **Delete Netmask**

This command is used to delete a static netmask from the Netmask Table.

`delete netmask Ipaddress`

*Ipaddress*

The IP address of the network

### **Example**

Command> delete netmask 192.168.8.0

Netmask successfully deleted

### **See Also**

show table netmask - page 4-23

add netmask - page 4-25

save netmask - page 4-24

## SNMP Configuration

The commands in Table 4-5 allow you to configure the PortMaster as a Simple Network Management Protocol (SNMP) agent. Only use SNMP writes if you understand the risks involved.

Table 4-5 SNMP Commands

Command Syntax
show table snmp
set snmp on   off
save snmp
set sysname <i>String</i> <span style="float: right;">see page 3-20</span>
set snmp readcommunity   writecommunity <i>String</i>
add snmp host reader   writer any   none   <i>Ipaddress</i>
delete snmp host reader   writer   <i>Ipaddress</i>

### Show Table SNMP

This command shows the settings in the SNMP Table.

```
show table snmp
```

### Usage

The SNMP Table is used to check the settings for the SNMP read and write communities, which should be set so that configuration information is not changed by unauthorized users.

### Example

```
Command> show table snmp
SNMP Readers (public): Any
SNMP Writers (private): None
```

### **See Also**

set snmp - page 4-28  
save snmp - page 4-29

## **SNMP Support**

This command allows you to enable or disable PortMaster support for SNMP monitoring.

set snmp on | off

on	Enables support for SNMP.
off	Disables support for SNMP. This is the default.

### **Usage**

To enable support for SNMP, you must use "set snmp on."



**Note** – After enabling or disabling SNMP, you must use the "save snmp" or "save all" command and reboot the PortMaster before the change takes effect.

### **Example**

Command> set snmp on  
SNMP will be enabled after next reboot

### **See Also**

show modules - page 3-33  
show table snmp - page 4-27  
save snmp - page 4-29  
add snmphost - page 4-30



## Save SNMP

This command saves the settings of the SNMP parameters in the SNMP Table.

```
save snmp
```

### Usage

This command writes the SNMP Table settings to the nonvolatile memory of the PortMaster. You can also use "save all."

### Example

```
Command> save snmp  
SNMP table successfully saved
```

### See Also

set snmp - page 4-28

## SNMP Read/Write

This command allows you to set the read and write community strings used for SNMP security.

```
set snmp readcommunity | writecommunity String
```

readcommunity	Use to set the read community.
---------------	--------------------------------

writecommunity	Use to set the write community.
----------------	---------------------------------

<i>String</i>	String up to 16 characters long. Default for read is public; default for write is private.
---------------	--

## Usage

Community strings allow you to control access to the Management Information Base (MIB) information on selected SNMP devices (such as the PortMaster).

A host must know the read community string to read the MIB information, and must know the write community string to set information on the SNMP agent.

## Example

```
Command> set snmp read public
SNMP read community changed to: public
```

## See Also

show table snmp - page 4-27  
set snmp - page 4-28  
save snmp - page 4-29  
add snmp host - page 4-30

## Add SNMP Host

This command allows you to control SNMP security by specifying the addresses of the read or write hosts that are allowed to access SNMP information.

`add snmp host reader | writer any | none | Ipaddress`

reader	Use to add a read host.
writer	Use to add a write host.
any	All hosts using the correct read or write community are allowed to read or write SNMP information.
none	No SNMP reads or writes are accepted by the PortMaster.
<i>Ipaddress</i>	The IP address of the read or write host.

## Usage

The specification of read and write hosts allows another level of security beyond the community strings. If SNMP hosts are specified, each host wanting to access SNMP information must possess the correct community string and must also be on the read or write host list.

## Example

```
Command> add snmphost reader 192.168.1.99
New SNMP reader 192.168.1.99 successfully added
Command> add snmphost writer none
```

## See Also

show table snmp - page 4-27  
set snmp - page 4-28  
save snmp - page 4-29  
delete snmp host - page 4-31

## Delete SNMP Host

This command allows you to delete read or write hosts that are allowed to access SNMP information.

```
delete snmphost reader | writer Ipaddress
```

reader	Use to delete a read host.
writer	Use to delete a write host.
<i>Ipaddress</i>	The IP address of the read or write host.

## Example

```
Command> delete snmphost reader 192.168.1.99
SNMP reader 192.168.1.99 successfully deleted
```

## See Also

add snmphost - page 4-30





This chapter describes how to use the Command Line Interface to configure the Ethernet interface of the PortMaster. Detailed command definitions follow a command summary table.

Examples in this chapter are from a PortMaster PM-2R, which uses Ether0 for its Ethernet interface. All PortMasters use this same designation. In addition, the IRX-211 uses Ether1 for a second Ethernet interface.

## *Displaying Ethernet Data*

To display information about your configuration, use the following commands:

- show Ether0 - see page 3-23
- ifconfig - see page 3-5
- show netconns - see page 3-34
- show netstat - see page 3-35
- show arp Ether0 - see page 3-22
- show all - see page 3-21
- show global - see page 3-26

For general information about Command Line Interface commands, refer to Chapter 2, "Introduction."

## *Configuring Ethernet Interface Data*

1. At the command line, enter your Ethernet configuration information as in the following example:

```
Command> set ether0 address 172.16.200.1
```

```
Command> set ether0 netmask 255.255.255.0
```

As you press [Enter] following each command, the PortMaster responds by echoing the configuration change you have made. For example:

```
Command> set ether0 address 172.16.200.1
Local (ether0) address changed from  to 172.16.200.1
```

For a description of each command, refer to “Description of Ethernet Commands” on page 5-3.



**Note** – If you change the Ethernet IP address, you must reboot the PortMaster for the change to take effect.

2. When you finish configuring the Ethernet interface, enter the “save ether0” command to write your configuration changes to the nonvolatile memory of the PortMaster, as follows:

```
Command> save ether0
```

The “save all” command can also be used.

## Summary of Ethernet Commands

The Ethernet commands in Table 5-1 configure the Ethernet interfaces Ether0 and (on the IRX-211) Ether1.

Table 5-1 Ethernet Configuration

Command Syntax
set Ether0 address <i>Ipaddress</i>
set Ether0 netmask <i>Ipmask</i>
set Ether0 broadcast high   low
set Ether0 routing on   broadcast   listen   off
set Ether0 ipxnet <i>Ipxnetwork</i>
set Ether0 ipxframe ethernet_802.2   ethernet_802.2_ii   ethernet_802.3   ethernet_ii
set ether0 ip up   down   enabled   disabled <sup>1</sup>
set ether0 ipx up   down   enabled   disabled <sup>1</sup>



Table 5-1 Ethernet Configuration (Continued)

Command Syntax	
set Ether0 ifilter <i>Filtername</i>	
set Ether0 ofilter <i>Filtername</i>	
set Ether0 ospf on   off	- see page 11-21

1. This command is available only on the ether0 port, even on the IRX-211.

## Description of Ethernet Commands

These commands affect the Ethernet interface of the PortMaster. The Ethernet interface of the PortMaster is called Ether0 on all models. In addition, the IRX-211 has a second Ethernet interface, called Ether1. All Ether0 commands can be used for Ether1, except as noted in this section.

### IP Address

This command sets the IP address of the Ethernet interface.

set Ether0 address *Ipaddress*

<i>Ether0</i>	Ethernet interface
<i>Ipaddress</i>	IP address or host name

### Usage

For more information about setting the IP address, refer to the hardware installation guide for your PortMaster.

### Example

```
Command> set ether0 address 172.16.200.1
Local (ether0) address changed from  to 172.16.200.1
```

### See Also

set Ether0 netmask - page 5-4

## IP Netmask

This command sets the IP netmask used by the Ethernet interface.

set *Ether0* netmask *Ipmask*

*Ether0*                      Ethernet interface

*Ipmask*                     IP netmask

## Usage

The value of *Ipmask* defaults according to the class of IP address.

## Example

Command> set ether0 netmask 255.255.255.128  
ether0 netmask changed from 255.255.255.0 to 255.255.255.128

## See Also

set Ether0 address - page 5-3  
show table netmask - page 4-23

## IP Broadcast Address

This command determines which broadcast address the PortMaster will use.

set *Ether0* broadcast high | low

*Ether0*                      Ethernet interface.

high                        Use a host part of all ones (example 192.168.1.255) in the broadcast address.

low                         Use a host part of all zeros (example 192.168.1.0) in the broadcast address. This is the default.

## Usage

This should match the broadcast address used by all hosts and routers on the same network segment.

## Example

Command> set ether0 broadcast high  
ether0 broadcast address changed from low to high

## See Also

set default - page 4-9

## Routing

This command specifies whether the PortMaster broadcasts RIP information to the local Ethernet and listens for RIP information from other routers on the local Ethernet.

set *Ether0* routing on | broadcast | listen | off

<i>Ether0</i>	Ethernet port.
on	Broadcast and listen. This is the default.
broadcast	Broadcast only.
listen	Listen only.
off	Neither broadcast nor listen.

## Usage

PortMasters send and listen for RIP packets if routing is turned on.

## Example

Command> set ether0 routing on  
ether0 routing changed from off to on (broadcast,listen)



### ***See Also***

set default - page 4-9  
show routes - page 3-36  
show ipxroutes - page 3-28

## ***IPX Network***

This command sets the IPX network number for the Ethernet interface.

set *Ether0* ipxnet *Ipxnetwork*

<i>Ether0</i>	Ethernet interface
<i>Ipxnetwork</i>	A hexadecimal value

### ***Usage***

The IPX network number should be entered in hexadecimal format, as shown in the example.

### ***Example***

Command> set ether0 ipxnet 0000000f  
ether0 IPX network changed from 00000000 to 0000000f

### ***See Also***

set Ether0 ipxframe - page 5-7  
set ipx on - page 4-13  
set user ipxnet - page 12-14

## IPX Frame Type

This command sets the IPX frame type.



**Note** – This command should be entered on one line, without any breaks. The line break shown here is due to the limited space available.

```
set Ether0 ipxframe ethernet_802.2 | ethernet_802.2_ii |  
ethernet_802.3 | ethernet_ii
```

<i>Ether0</i>	Ethernet interface.
<i>ethernet_802.2</i>	Use Ethernet 802.2 protocol. This is the default encapsulation used by Novell NetWare Version 4.0.
<i>ethernet_802.2_ii</i>	Use Ethernet 802.2_ii protocol. This encapsulation is not commonly used.
<i>ethernet_802.3</i>	Use Ethernet 802.3 protocol. This is the default encapsulation used by Novell NetWare Version 3.11.
<i>ethernet_ii</i>	Use Ethernet II protocol. This is sometimes used for networks that handle both TCP/IP and IPX traffic.

## Usage

The encapsulation method and frame type were selected when your Novell IPX network servers were installed. The PortMaster IPX settings should match those of your IPX network.

## Example

```
Command> set ether0 ipxframe ethernet_ii  
ether0 IPX frame type set to ethernet_ii
```

## See Also

set Ether0 ipxnet - page 5-6  
set ipx on - page 4-13

## ***IP***

This command enables or disables the IP protocol on the interface.

```
set ether0 ip up | down | enabled | disabled
```

up	Enable IP.
down	Disable IP.
enabled	Enable IP.
disabled	Disable IP.

## ***Usage***

This command is only available on the Ether0 interface, even on the IRX-211. The default is for the IP protocol to be enabled.

## ***Example***

```
Command> set ether0 ip enabled  
ether0 status for protocol IP changed from Disabled to Enabled
```

## ***IPX***

This command enables or disables the IPX protocol on the interface.

```
set ether0 ipx up | down | enabled | disabled
```

up	Enable IPX.
down	Disable IPX.
enabled	Enable IPX.
disabled	Disable IPX.



## Usage

This command is only available on the Ether0 interface, even on the IRX-211.

## Example

Command> set ether0 ipx enable  
ether0 status for protocol IPX changed from Disabled to Enabled

## See Also

set ipx on - page 4-13

## Input Filter

This command sets a packet filter for evaluating packets entering the PortMaster on the Ethernet interface.

set Ether0 ifilter Filtername

*Ether0*                      Ethernet interface

*Filtername*                Input filter name that is in the filter table

## Usage

The filter must be created before it can be used. Refer to the *Configuration Guide for PortMaster Products* for more information on how to construct a filter. If the filter is changed, this command must be re-entered for the changes to be seen by the Ethernet interface.

Neither the interface nor the PortMaster needs to be reset or rebooted for the filter to be effective. You remove the filter by entering the command without a filter name.

## Example

Command> set ether0 ifilter ether0.in  
ether0 filters enabled: in = ether0.in, out =

## See Also

set Ether0 ofilter - page 5-10  
show filter - page 14-4  
show table filter - page 14-4

## Output Filter

This command sets a packet filter for evaluating packets exiting the PortMaster on the Ethernet interface.

set *Ether0* ofilter *Filtername*

*Ether0*                      Ethernet interface

*Filtername*                Output filter name that is in the filter table

## Usage

The filter must be created before it can be used. Refer to the *Configuration Guide for PortMaster Products* for more information on how to construct a filter. If the filter is changed, this command must be re-entered for the changes to be seen by the Ethernet interface.

Neither the interface nor the PortMaster needs to be reset or rebooted for the filter to be effective. You remove the filter by entering the command without a filter name.

## Example

Command> set ether0 ofilter ether0.out  
ether0 filters enabled: in = ether0.in, out = ether0.out

## See Also

set Ether0 ifilter - page 5-9  
show filter - page 14-4  
show table filter - page 14-4

This chapter describes how to use the Command Line Interface to configure asynchronous ports. Detailed command definitions follow a command summary table. A summary table for the Modem Table commands also appears in this chapter, followed by a description of the commands.

Asynchronous ports can be configured as login, device, or network ports, or any combination of these.

Examples in this chapter are from a PortMaster PM-2R, which uses the indicator *S0* for the first asynchronous port. Some PortMaster models use this same designation for the first asynchronous port, while some use the designation *C0*. See Table 2-1, "Available Port Types by PortMaster Model," on page 2-1 for the range of asynchronous ports available on each PortMaster model.

## *Displaying Asynchronous Port Data*

To display information about your configuration, use the following commands:

- show *S0* - see page 3-37
- show all - see page 3-21
- ifconfig - see page 3-5
- show sessions - see page 3-40

For general information about Command Line Interface commands, refer to Chapter 2, "Introduction."



## Configuring Asynchronous Ports

1. At the command line, enter your asynchronous port configuration information as in this example:

```
Command> set s0 network dialout
Command> set s0 group 78
Command> reset s0
Command> save s0
```

As you press [Enter] following each command, the PortMaster responds by echoing the configuration change you have made. For example:

```
Command> set s0 protocol ppp
Protocol for port S0 changed from slip to ppp
```

For a description of each command, refer to "Description of Asynchronous Commands" on page 6-5.

2. When you finish configuring the asynchronous port, enter the "save s0" command to write your configuration changes to the nonvolatile memory of the PortMaster, as follows:

```
Command> save s0
```

The "save all" command can also be used.

## Summary of Asynchronous Commands

The asynchronous port commands in Table 6-1 configure asynchronous serial ports. Commands marked with a leading bullet (•) can only be used if the port is configured for a dedicated network connection with the “set network hardwired” command.

Table 6-1 Asynchronous Port Configuration

Command Syntax	
show all	- see page 3-21
show S0	- see page 3-37
save S0	- see page 3-17
reset S0	- see page 3-19
set S0 extended on   off	
set S0 login [device <i>Device</i> ] [network dialin   dialout   twoway]	
set S0 device <i>Device</i> [network dialin   dialout   twoway]	
set S0 twoway <i>Device</i> [network dialin   dialout   twoway]	
set S0 network dialin   dialout   twoway	
set S0 network hardwired	
set S0 speed [1   2   3] 300   600   1200   2400   4800   9600   19200   38400   57600   76800   115200	
set S0 parity even   none   odd   strip	
set S0 databits 5   6   7   8	
set S0 stopbits 1   2	
set S0 xon/xoff on   off	
set S0 rts/cts on   off	
set S0 override xon   rts   speed   parity   databits on   off	
set S0 modem <i>ModemName</i>	
set S0 modem   cd on   off	
set S0 group <i>Group</i>	
set S0 idletime <i>Number</i> [minutes   seconds]	

Table 6-1 Asynchronous Port Configuration (Continued)

Command Syntax
set S0 security on   off
set S0 message <i>String</i>
set S0 prompt <i>String</i>
set S0 username   autolog <i>String</i>
set S0 hangup on   off
set S0 dialback_delay <i>Seconds</i>
set S0 dtr_idle on   off
set S0 service_login netdata   portmaster   rlogin   telnet [ <i>Tport</i> ]
set S0 service_device netdata   portmaster   rlogin   telnet [ <i>Tport</i> ]
set S0 host default   prompt   <i>Ipaddress</i>
set S0 access on   off
set S0 termtype <i>String</i>
set S0 ifilter <i>Filtername</i>
• set S0 ofilter <i>Filtername</i>
• set S0 protocol slip   ppp
• set S0 address <i>Ipaddress</i>
• set S0 netmask <i>Ipmask</i>
• set S0 destination <i>Ipaddress</i> [ <i>Ipmask</i> ]
• set S0 mtu <i>MTU</i>
• set S0 routing on   off   broadcast   listen
• set S0 ipxnet <i>Ipxnetwork</i>
• set S0 compression on   off
• set S0 map <i>Hex</i>
set S0   W1 ospf on   off

- see page 11-22



## Description of Asynchronous Port Types

Asynchronous port types are described in Table 6-2. The first three options can be combined with the last three options. A port configured as a network hardwired port cannot be combined with another port type.

Table 6-2 Asynchronous Port Types

Port Type	Description
login	The port is available for a login user establishing a terminal session to a host on the network.
device	A host on the network can originate a connection to the port; for example, from a host to a printer via the PortMaster.
twoway	Allows both dial-in and dial-out connections.
network hardwired	A hardwired connection; for example, a WAN link over a dedicated point-to-point asynchronous leased line.
network dialin	The port is available for a dial-in network user to establish a network connection using SLIP or PPP.
network dialout	The port is available for use by dial-out network locations defined in the Location Table.
network twoway	The port is available for both network dial-in and network dial-out.

## Description of Asynchronous Commands

These commands affect the asynchronous ports of the PortMaster. Table 2-1, "Available Port Types by PortMaster Model," on page 2-1 lists the range of asynchronous ports available on each PortMaster model.

## Extended

This command sets the extended mode on or off for a single asynchronous port, or for all asynchronous ports.

set *S0* extended on | off

on	Extended mode on.
off	Extended mode off. This is the default.

## Usage

When extended mode is on, the “show” command provides more detailed output.

## Example

Command> set s0 extended on  
Extended mode for port S0 changed from off to on

## Login

This command sets a single asynchronous port or all asynchronous ports for a selected login service.

set *S0* login [device *Device*] [network dialin | dialout | twoway]

<i>Device</i>	Device designation—for example, /dev/tty0.
dialin	In this mode, the port will accept dial-in-only network connections. The remote system is required to enter a user name and password. Dial-in network connections are controlled by the RADIUS server or the User Table.

dialout	In this mode, the port becomes available for dialing to remote destinations and initiating network connections to those destinations. Dial-out network connections are controlled by the Location Table.
twoway	In this mode, the port will accept dial-in network connections, as well as being available for dial-out to remote destinations.

## *Usage*

Using the "set s0 login" command without any optional keywords sets the port for user login. After being verified, or authenticated, a login session is established to the host computer.

You can set the login service to "network twoway" for all the asynchronous ports simultaneously by using the "set all" command as shown in the examples.

## *Examples*

Command> set s0 login network dialin

Port type for port S0 changed from Login to User Login/Network(dialin)

Command> set all login network twoway

Port type for port S0 changed from Netwrk to User Login/Network(twoway)

Port type for port S1 changed from Netwrk to User Login/Network(twoway)

Port type for port S2 changed from Netwrk to User Login/Network(twoway)

. . . . .

Port type for port S29 changed from Netwrk to User Login/Network(twoway)

## *See Also*

set S0 service-login - page 6-27

set S0 device - page 6-8

set S0 host - page 6-29



## Device

This command sets a selected asynchronous port to operate as a host-controlled device.

set S0 device *Device* [network dialin | dialout | twoway]

<i>Device</i>	Device designation—for example, /dev/ttyp0 or /dev/network.
dialin	In this mode, the port will accept dial-in only network connections. The remote system is required to enter a user name and password. Dial-in network connections are controlled by the RADIUS server or the User Table.
dialout	In this mode, the port becomes available for dialing to remote destinations and initiating network connections to those destinations. Dial-out network connections are controlled by the Location Table.
twoway	In this mode, the port will accept dial-in network connections, as well as being available for dial-out to remote destinations.

## Usage

In the following example, a PortMaster shared device (/dev/ttyp0) is shown. To use the PortMaster device service, you must have the PortMaster “in.pmd” daemon installed and running on the specified host. Note that two ports cannot have the same tty designation.

## Example

```
Command> set s0 device /dev/ttyp0
Port type for port S0 changed from User Login to Host Device(/dev/ttyp0)
```

## See Also

set S0 host - page 6-29  
set S0 login - page 6-6  
set S0 twoway - page 6-9

## Two-Way

This command sets a selected asynchronous port for two-way operation.

set S0 twoway *Device* [network dialin | dialout | twoway]

<i>Device</i>	Device designation—for example, /dev/ttyp0 or /dev/network.
dialin	In this mode, the port will accept dial-in only network connections. The remote system is required to enter a user name and password. Dial-in network connections are controlled by the RADIUS server or the User Table.
dialout	In this mode, the port becomes available for dialing to remote destinations and initiating network connections to those destinations. Dial-out network connections are controlled by the Location Table.
twoway	In this mode, the port will accept dial-in network connections, as well as being available for dial-out to remote destinations.

## Usage

A PortMaster port can be configured for several different types of operation. For example, a port set for login users can also be set to access host devices; this is called two-way operation.

The specified port will operate in User Login mode if carrier is detected on pin 8 of the RS-232 connector (DCD). Otherwise, it can be accessed as a host device on the computer through "in.pmd" or a Telnet session.

## Example

```
Command> set s0 twoway /dev/ttyp0
```

```
Port type for port S0 changed from Login to TwoWay(/dev/ttyp0)
```

## See Also

set S0 device - page 6-8

set S0 login - page 6-6

set S0 network twoway - page 6-10



## Network Service

This command sets a single asynchronous port or all asynchronous ports to a network service.

set S0 network dialin | dialout | twoway

dialin	In this mode, the port will accept dial-in only network connections. The remote system is required to enter a user name and password. Dial-in network connections are controlled by the RADIUS server or the User Table.
dialout	In this mode, the port becomes available for dialing to remote destinations and initiating network connections to those destinations. Dial-out network connections are controlled by the Location Table.
twoway	In this mode, the port will accept dial-in network connections, as well as being available for dial-out to remote destinations.

## Usage

In any of the three Dial modes, the port can also be configured to support other port operations concurrently. If one of the other port types is selected, those port type parameters become available.

You can set the network type to dial-in for all the asynchronous ports simultaneously by using the "set all" command as shown in the examples.

## Examples

```
Command> set s0 network twoway
Port type for port S0 changed from Login to Network(twoway)
```

```
Command> set all network dialin
Port type for port S0 changed from Netwrk to Network(dialin)
Port type for port S1 changed from Netwrk to Network(dialin)
Port type for port S2 changed from Login to Network(dialin)
```

```
. . . . .
. . . . .
```

```
Port type for port S29 changed from Netwrk to Network(dialin)
```



### *See Also*

set S0 device - page 6-8  
set S0 login - page 6-6  
set S0 twoway - page 6-9

## *Network Hardwired*

This command sets a single asynchronous port or all asynchronous ports for a permanent network connection that requires no dialing or authentication.

set S0 network hardwired

### *Usage*

Use this command for ports used in a dedicated or hardwired network connection between two sites. The port immediately begins running the specified protocol. None of the other port types can be combined with network hardwired.

You can set the network hardwired for all the asynchronous ports simultaneously by using the "set all network hardwired" command.

### *Example*

Command> set s0 network hardwired  
Port type for port S0 changed from Login to Network(hardwired)

## *Speed*

This command sets the baud rate for a single asynchronous port or all asynchronous ports.

set S0 speed [1 | 2 | 3] 300 | 600 | 1200 | 2400 | 4800 | 9600 | 19200 |  
38400 | 57600 | 76800 | 115200

1 | 2 | 3

Indicates which of the three baud rates is being set: 1, 2, or 3.  
Default is 1.

300 | 600, etc.

Indicates DTE rate. Default is 9600 bps.

## Usage

Modern modems should be set to run at a fixed rate. To define a fixed rate, lock the DTE rate by setting all three baud rates to the same value.

You can set the speed for all the asynchronous ports simultaneously by using the "set all speed" command.

## Example

```
Command> set s0 speed 115200
Speed for port S0 (1) changed from 9600 to 115200

Command> set s0 speed 2 115200
Speed for port S0 (2) changed from UNKNWN to 115200

Command> set s0 speed 3 115200
Speed for port S0 (3) changed from UNKNWN to 115200
```

## See Also

set S0 modem *ModemName* - page 6-18

## Parity

This command sets the parity checking to be used for a single asynchronous port or all asynchronous ports.

set S0 parity even | none | odd | strip

even	Set for even parity.
none	Set for no parity bit. This is the default.
odd	Set for odd parity.
strip	Set to strip the parity bit from the data stream when it is received by the PortMaster.

## Usage

When "strip" is selected, the parity bit is removed upon receipt by the PortMaster. For most purposes, "none" should be selected.

You can set the parity for all the asynchronous ports simultaneously by using the "set all parity" command.

## Example

```
Command> set s0 parity none
Parity for port S0 changed from even to none
```

## See Also

set S0 modem *ModemName* - page 6-18

set S0 speed - page 6-11

set S0 databits - page 6-13

set S0 stopbits - page 6-14

## Databits

This command sets the number of databits per byte for a single asynchronous port or all asynchronous ports.

```
set S0 databits 5|6|7|8
```

5	5 databits.
6	6 databits.
7	7 databits.
8	8 databits. This is the default.

## Usage

The default of 8 is the most widely used.

You can set the databits for all the asynchronous ports simultaneously by using the "set all databits" command.



### Example

Command> set s0 databits 8  
Data bits for port S0 changed from 7 to 8

### See Also

set S0 modem *ModemName* - page 6-18  
set S0 speed - page 6-11  
set S0 parity - page 6-12  
set S0 stopbits - page 6-14

## Stopbits

This command sets the number of stop bits in the data frame on a single asynchronous port or all asynchronous ports.

set S0 stopbits 1 | 2

- |   |                                  |
|---|----------------------------------|
| 1 | 1 stop bit. This is the default. |
| 2 | 2 stop bits.                     |

### Usage

The default of 1 is the most widely used.

You can set the stop bits for all the asynchronous ports simultaneously by using the "set all stopbits" command.

### Example

Command> set s0 stopbits 1  
Stop bits for port S0 changed from 2 to 1

### See Also

set S0 modem *ModemName* - page 6-18  
set S0 speed - page 6-11  
set S0 parity - page 6-12  
set S0 databits - page 6-13

## ***Xon/Xoff***

This command sets the use of software flow control on a single asynchronous port or all asynchronous ports.

set S0 xon/xoff on | off

on                      Software flow control on. This is the default.

off                     Software flow control off.

## ***Usage***

The PortMaster uses software flow control, with the ASCII control characters DC1 and DC3, to communicate with the attached device to start and stop the flow of data. This command should be used only if Ready To Send/Clear To Send (RTS/CTS) flow control is not available on the attached device.

You can set the software flow control for all the asynchronous ports simultaneously by using the "set all xon/xoff" command.

## ***Example***

Command> set s0 xon/xoff off

Xon/Xoff flow control for port S0 changed from on to off

## ***See Also***

set S0 modem *ModemName* - page 6-18

set S0 rts/cts - page 6-16

## **RTS/CTS**

This command sets the use of hardware flow control on a single asynchronous port or all asynchronous ports.

set S0 rts/cts on | off

on	Use hardware flow control on the port.
off	Do not use hardware flow control on the port. This is the default.

### **Usage**

This parameter is used by devices that require hardware flow control. When the PortMaster is able to receive data from the attached device, it raises RTS on pin 4 of the RS-232 connector. Output from the PortMaster only occurs if the CTS modem line on pin 5 of the RS-232 connector is raised by the attached device.

You can set the hardware flow control for all the asynchronous ports simultaneously by using the "set all rts/cts" command.

### **Example**

Command> set s0 rts/cts on  
RTS/CTS flow control for port S0 changed from off to on

### **See Also**

set S0 modem *ModemName* - page 6-18  
set S0 xon/xoff - page 6-15



## Override

This command sets a single asynchronous port or all asynchronous port parameters as overrideable by the host in Host Device mode.

set S0 override xon | rts | speed | parity | databits on | off

- |     |  |
|-----|--|
| on  | Allow host to override the selected parameter.   |
| off | Do not allow host to override the selected parameter. The default is that all overrides are off. |

## Usage

The PortMaster allows overrides to be set for baud rate, parity, databits, and flow control. This feature allows the host running "in.pmd" to alter the active parameters through software control, by using operating system I/O calls (ioctl calls in UNIX).

You can set an override parameter for all the asynchronous ports simultaneously by using the "set all override" command.

## Example

Command> set s0 override speed on  
Host override of speed for port S0 changed from off to on

## See Also

set S0 device - page 6-8  
set S0 modem *ModemName* - page 6-18  
set S0 speed - page 6-11  
set S0 parity - page 6-12

## Modem Type

This command selects a modem from the Modem Table.

```
set S0 modem ModemName
```

*ModemName*

Name of modem from the Modem Table

## Usage

Before you can select a modem name, you must first define the names and associated parameters in the Modem Table. (Refer to "Modem Table Configuration" on page 6-40 for more information.)

## Example

```
Command> set s0 modem usr-v34
```

Modem type for port S0 changed from to usr-v34

## See Also

add modem - page 6-42

show table modem - page 6-40

## Modem Control

This command enables the PortMaster to monitor the presence of the data carrier detect (DCD) signal on a modem attached to the asynchronous port to determine whether the line is in use.

```
set S0 modem | cd on | off
```

on

Monitor presence of the carrier detect signal.

off

Do not monitor presence of the carrier. This is the default.

## Usage

If set "on," the PortMaster tracks the actual state of carrier as input on the port.  
If set "off," the PortMaster assumes that carrier is always asserted—DCD is high.

The following options indicate the effect of carrier assertion for each port type:

- *Login*. If carrier is not asserted, the port is unavailable. If carrier is asserted, the PortMaster initiates authentication and displays a login prompt.
- *Device*. If carrier is not asserted, the port is unavailable. If carrier is asserted, the port is available for the device service.
- *TwoWay*. If carrier is not asserted, the port is available for device services. If carrier is asserted, the port will attempt to establish an inbound connection and disable the device service.
- *Network Hardwired*. If carrier is not asserted, the port is unavailable. If carrier is asserted, the port attempts to establish a network connection.
- *Network Dialin*. If carrier is not asserted, the port is unavailable. If carrier is asserted, the PortMaster initiates authentication and displays a login prompt.
- *Network Dialout*. When the port is configured as a network dial-out port, the assertion of carrier has no effect, but the transition of carrier from asserted to not asserted will cause the port to be reset.
- *Network TwoWay*. If carrier is not asserted, the port is available for device services. If carrier is asserted, the port will attempt to establish a network connection and disable the device service.

## Examples

```
Command> set s0 modem on  
CD required for port S0 changed from off to on
```

## See Also

add modem - page 6-42  
show table modem - page 6-40



## Group

This command is used assign asynchronous ports to modem pools for use by dial-out locations. A group number is assigned to each location in the Location Table. Refer to Chapter 13, "Location Table and DLCI Table," for more information.

set S0 group *Group*

*Group*

Group number, from 0 to 99. Default is 0.

## Usage

For modem pools to work, each port must be assigned to a dial group, and each location must specify a dial group.

## Example

Command> set s0 group 2

Group number for port S0 changed from 0 to 2

## See Also

set location group - page 13-12

## Idle Timeout

This command indicates how long the PortMaster should wait after activity stops on a single asynchronous port or all asynchronous ports, before disconnecting a dial-in connection.

set S0 idletime *Number* [minutes | seconds]

*Number*

Timeout value in minutes or seconds. Any value from 0 to 240.  
The default value is 0.

minutes

Sets the idle time in minutes. This is the default.

seconds

Sets the idle time in seconds.

## Usage

If the idle time value is set to 0, the idle timer is disabled.

If set to 1 minute or higher, a dial-in user has five minutes to respond to a login, password, or host prompt. If the user does not respond, the port resets, making it available to another user. Setting the idle time to 1 minute turns off the idle timer after the user logs in.

You can set the idle time of all the ports simultaneously by using the "set all idletime" command as shown in the examples.

## Examples

```
Command> set s0 idletime 120
Idle timeout for S0 changed from 0 to 120
```

```
Command> set all idletime 30
Idle timeout for S0 changed from 0 to 30
Idle timeout for S1 changed from 0 to 30
Idle timeout for S2 changed from 0 to 30
```

```
  . . . . .
  . . . . .
```

```
Idle timeout for S29 changed from 0 to 30
```

## See Also

add S0 modem - page 6-18

## Security

This command sets the security level for a single asynchronous port or all asynchronous ports.

```
set S0 security on | off
```

on	Enable security; disable passthrough logins.
off	Disable security; enable passthrough logins. This is the default.

## Usage

If security is set to "off," any user name that is not found in the User Table is connected to the port's host for authentication and login. If security is set to "on," the User Table is checked first, and if the username is not found and a RADIUS server is configured, RADIUS is consulted. When you are using RADIUS security, this command must be set to "on."

You can set the security for all the ports simultaneously by using the "set all security" command.

## Example

```
Command> set s0 security on
Security for port S0 changed from off to on
```

## See Also

set authentication\_server - page 4-18

## Message

This command sets the login message to be displayed to the user prior to the login prompt on a single asynchronous port or all asynchronous ports.

```
set S0 message String
```

<i>String</i>	Login message
---------------	---------------

## Usage

The value for this parameter is a string of up to 240 characters. New lines are designated by the caret symbol (^). It can be helpful to include identification information in this message.

You can set the message command for all the ports simultaneously by using the "set all message" command.



### ***Example***

Command> set s0 message Welcome to the Network (PMI/0)  
New message:  
Welcome to the Network (PMI/0)  
For ports: S0

### ***See Also***

set S0 username - page 6-24  
set S0 prompt - page 6-23

## ***Prompt***

This command sets the user login prompt for a single asynchronous port or all asynchronous ports.

set S0 prompt *String*

*String*

Login prompt. The default is "\$hostname login:".

### ***Usage***

Any printable ASCII characters may be entered, except for quotation marks ("). If the string "\$hostname" is included in the login prompt, the host name for the port is substituted for the string.

You can set the prompt for all the ports simultaneously by using the "set all security" command.

### ***Example***

Command> set s0 prompt \$hostname login:  
New Login Prompt:  
\$hostname login:  
For ports: S0

### ***See Also***

set S0 username - page 6-24  
set host - page 4-5

## Username

This command sets an Autolog name for the asynchronous port.

```
set S0 username | autolog String
```

<i>String</i>	Autolog user name
---------------	-------------------

## Usage

If this command is used, the user will not receive the standard login prompt. Instead, the PortMaster will initiate a session to the default host as if the user had typed *String* in response to the login prompt. To disable Autolog give the command "set s0 autolog" without the value *String*.

## Example

```
Command> set s0 autolog posales  
Username for port S0 changed from off to posales
```

## See Also

set S0 message - page 6-22  
set S0 prompt - page 6-23

## Hangup

This command controls whether the DTR signal on the port is dropped for 500 milliseconds after the termination of a user session.

```
set S0 hangup on | off
```

on	DTR will be dropped after the session terminates. This is the default.
off	DTR will not be dropped after the session terminates.

### ***Usage***

Resetting the port administratively, using the "reset" command, always drops the DTR signal.

### ***Example***

Command> set s0 hangup on  
DTR Hangup for port S0 changed from off to on

### ***See Also***

reset S0 - page 3-19

## ***Dialback Delay***

This command sets the delay between the disconnection of a dialback user and the time when the PortMaster can dial back to the user to establish a connection.

set S0 dialback\_delay *Seconds*

*Seconds*

The delay time in seconds. The default is 0.

### ***Usage***

For some modems that take a long time to reset after DTR drops, it is necessary to introduce a dialback delay, so that the modem is ready to accept dial commands after the PortMaster has disconnected the user.

### ***Example***

Command> set s0 dialback\_delay 5  
Dialback delay for port S0 changed from 0 to 5

### ***See Also***

set user dialback - page 12-8



## ***DTR Idle***

Use the DTR idle parameter when you want to connect a PortMaster to a bulletin board service (BBS) or other host allowing bidirectional communications. Refer to the *Configuration Guide for PortMaster Products* for more information.

set S0 dtr\_idle on | off

- |     |   |
|-----|---|
| on  | DTR is on, and any DTR drop is for 500 milliseconds. This is the default. |
| off | DTR is off. Allows bidirectional communications.                          |

## ***Usage***

This parameter changes the behavior of the port to better accommodate connecting the PortMaster to systems or hosts that do not support TCP/IP, but do have serial ports. This type of connection requires that you connect the PortMaster port to the host, typically with a null modem cable.

## ***Example***

Command> set s0 dtr\_idle off  
DTR Idle for port S0 changed from on to off

## ***See Also***

set S0 modem *ModemName* - page 6-18  
set S0 twoway - page 6-9

## Login Service

This command sets the network service to use in establishing login sessions for a selected asynchronous port, or all asynchronous ports.

```
set S0 service_login netdata | portmaster | rlogin | telnet [Tport]
```

netdata	Use the netdata login service.
portmaster	Use the PortMaster login service to connect to "in.pmd" on the login host. This is the default.
rlogin	Use remote login to connect to the login host.
telnet	Use Telnet to connect to the login host. Port will display "Press Enter to begin login" instead of the login prompt.
Tport	The designated TCP port on the host.

## Usage

When you set the port type as "login" or "twoway," you can set the login service parameters that specify the login service to be used for login sessions.

You can set the network service for all the ports simultaneously by using the "set all service\_login" command.

## Example

```
Command> set s0 service_login telnet
Login service for port S0 changed from portmaster to telnet
```

## See Also

telnet - page 3-12  
 set telnet - page 4-4  
 set S0 modem ModemName - page 6-18  
 set S0 service-device - page 6-28

## Device Service

This command sets the device service to be used by a single asynchronous port or all asynchronous ports.

```
set S0 service_device netdata | portmaster | rlogin | telnet [Tport]
```

netdata	Allow netdata connections to this port from the network.
portmaster	Used for host device emulation from a host with the "in.pmd" daemon installed.
rlogin	Allow rlogin connections to this port from the network.
telnet	Allow Telnet connections to this port from the network.
Tport	The TCP port for the connection.

## Usage

If the Port Type is "device" or "twoway," you can set the device service. This command allows users to connect through the PortMaster to shared devices such as printers or modems.

You can set the device service for all the ports simultaneously by using the "set all service\_device" command.

## Example

```
Command> set s0 service_device portmaster
Device Service for port S0 changed from telnet to portmaster
```

## See Also

set S0 device - page 6-8  
set S0 host - page 6-29  
set S0 login device - page 6-6



## Host

This command sets the login host for a single asynchronous port or all asynchronous ports.

`set S0 host default | prompt | Ipaddress`

<i>default</i>	Use default host setting.
<i>prompt</i>	Display host prompt before the login prompt. The user is required to enter a valid host name or Internet address for a host on the network. Entering "PPP" or "SLIP" at the prompt will return a login prompt.
<i>Ipaddress</i>	A specified IP address or host name of a login host or device host.

## Usage

The login host parameter defines the host to which the user is connected, in one of the three ways.

You can set the login host for all the ports simultaneously by using the "set all host" command, as shown in the example.

## Examples

Command> set s0 host prompt  
User will be prompted for host on port S0

Command> set all host default  
Host changed to default for all ports

## See Also

set host - page 4-5

## Access Override

This command sets the access override for a single asynchronous port or all asynchronous ports, and is used in conjunction with the access filter.

set S0 access on | off

on	Turn access override on.
off	Turn access override off. This is the default.

## Usage

When set to on, users are allowed to override the port's access filter with their own access filter by providing a correct username and password. User access filters must first be defined before you can use this option. Refer to the *Configuration Guide for PortMaster Products* for more information on defining access filters.

You can set the access override for all the ports simultaneously by using the "set all access" command.

## Example

Command> set s0 access on  
Access Enhancement for port S0 changed from off to on

## See Also

set S0 ifilter - page 6-31

## Termtype

This command sets the terminal type in the user's environment on a single asynchronous port or all asynchronous ports. This only works for the rlogin or PortMaster login service.

set S0 termtype *String*

<i>String</i>	Terminal type
---------------	---------------



## Usage

This optional field is used in either login or two-way mode. When a new session is established to the host, this terminal type is set in the user's environment. The terminal type should be valid on the host that the user is connected to with the rlogin or PortMaster login service.

You can set the terminal type for all the ports simultaneously by using the "set all termtype" command.

## Example

```
Command> set s0 termtype vt100  
Terminal Type for port S0 changed from  to vt100
```

## See Also

set S0 twoway - page 6-9  
set S0 login - page 6-6

## Input Filter

This command sets an input packet filter for packets entering the PortMaster on a single network hardwired asynchronous port, or all network hardwired asynchronous ports. The command can also be used to set an access filter for login users on these ports.

```
set S0 ifilter Filtername
```

*Filtername*            Input filter name that is in the Filter Table.

## Usage

When an input filter is specified on a network hardwired port, all packets received from the interface will be evaluated against the rule set for this filter.

This filter is used as an access filter for login users who are prompted for a host, and as the input filter for network hardwired ports. Filters become effective when a user logs in.



This setting is not used for dial-in and dial-out networking. Filters for dial-in users are set in the User Table or RADIUS, and filters for dial-out locations are set in the Location Table.

You remove the filter by entering the command without a filter name.

### Example

Command> set s0 ifilter s0.in  
Input filter for port S0 changed from to s0.in

### See Also

set S0 ofilter - page 6-32  
add filter - page 14-5



**Note** – The remaining commands are only used on network hardwired asynchronous ports. Dial-in users must use the User Table or RADIUS instead. Dial-out locations must use the Location Table instead.

## Output Filter

This command sets a packet filter for packets exiting the PortMaster on a single network hardwired asynchronous port, or all network hardwired asynchronous ports.

set S0 ofilter *Filtername*

*Filtername*                      Output filter name that is in the Filter Table.

### Usage

When this command is specified, all packets being sent from the network hardwired port are evaluated against the rule set for this filter. Only packets permitted by this filter are sent out of the PortMaster.

You remove the filter by entering the command without a filter name.

You can set the output filter for all the ports simultaneously by using the "set all ofilter" command.

### **Example**

```
command> set s0 ofilter s0.out
Output filter for port S0 changed from  to s0.out
```

### **See Also**

set s0 ifilter - page 6-31  
add filter - page 14-5

## **Protocol**

This command sets the transport protocol for a single network hardwired asynchronous port; or all network hardwired asynchronous ports.

```
set S0 protocol slip | ppp
```

slip	SLIP protocol
------	---------------

ppp	PPP protocol
-----	--------------

### **Usage**

This command is only used for network hardwired ports.

You can set the protocol for all the ports simultaneously by using the “set all protocol” command.

### **Example**

```
Command> set s0 protocol slip
Protocol for port S0 changed from ppp to slip
```

### **See Also**

set S0 compression - page 6-38  
set S0 mtu - page 6-36  
set debug - page 3-12

## Address

This command sets the local IP address of a selected network hardwired asynchronous port to create a numbered interface.

set S0 address *Ipaddress*

*Ipaddress*                      Host name or IP address

## Usage

Only used for network hardwired ports. If the local IP address is set to 0.0.0.0, the PortMaster uses the *Ether0* IP address for this end of the serial link.

## Example

Command> set s0 address 192.168.7.2  
Port S0 local address changed from 0.0.0.0 to 192.168.7.2

## See Also

set Ether0 address - page 5-3  
set reported\_ip - page 4-11

## Netmask

This command sets the IP netmask of the remote router for a network hardwired asynchronous port.

set S0 netmask *Ipmask*

*Ipmask*                      IP netmask

## Usage

Enter the netmask number in dotted quad notation.



### ***Example***

Command> set s0 netmask 255.255.255.0  
S0 netmask changed from 0.0.0.0 to 255.255.255.0

### ***See Also***

set Ether0 netmask - page 5-4  
set W1 netmask - page 7-7  
set user netmask - page 12-14  
set location netmask - page 13-9

## ***Destination***

This command sets the IP address of the remote router and the netmask for the network hardwired asynchronous port.

set S0 destination *Ipaddress* [*IPmask*]

*Ipaddress*                      IP address of remote router

*IPmask*                        IP netmask

### ***Usage***

If the destination is set to 255.255.255.255 for PPP connections, the PortMaster attempts to learn the remote system IP address. If set to 0.0.0.0, the port is disabled.

### ***Example***

Command> set s0 destination 255.255.255.255  
Port S0 destination changed from 0.0.0.0 to 255.255.255.255

### ***See Also***

set W1 destination - page 7-7

## MTU

This command sets the maximum transmission unit (MTU) for a single network hardwired asynchronous port, or all network hardwired asynchronous ports.

set S0 mtu MTU

MTU

Valid values for MTU are between 100 and 1520.

### Usage

The MTU defines the largest frame or packet that can be sent through this port, without fragmentation or discard. A packet that exceeds this value is automatically fragmented if IP, or discarded if IPX. PPP connections have a maximum of 1520, and SLIP connections have a maximum of 1006. For IPX, the MTU should be set to 1500.

You can set the MTU for all the ports simultaneously by using the "set all mtu" command.

### Example

Command> set s0 mtu 1500  
MTU for port S0 changed from 0 to 1500

### See Also

set S0 protocol - page 6-33

## Routing

This command sets routing for a network hardwired asynchronous port.

set S0 routing on | off | broadcast | listen

on	The PortMaster sends and listens for route information (RIP) on this port. This is the default.
off	The PortMaster neither sends nor listens for route information on this port.
broadcast	The PortMaster sends route information on this port.
listen	The PortMaster listens for route information on this port.

## Usage

The PortMaster automatically sends and listens for RIP packets to and from the hardwired port, if routing is turned on.

## Example

Command> set s0 routing on  
Routing for port S0 changed from listen to on (broadcast,listen)

## See Also

set Ether0 routing - page 5-5

## IPX Network

This command sets the IPX network number for the network hardwired asynchronous connection.

set S0 ipxnet *Ipxnetwork*

<i>Ipxnetwork</i>	IPX network number, 32-bit hexadecimal value
-------------------	--



## **Usage**

IPX traffic can be passed through a port if you assign an IPX network number to the hardwired network connection. The serial link itself must have a unique IPX network number that is different from those at each end of the Ethernet.

## **Example**

```
Command> set s0 ipxnet C009C801
Port S0 ipxnet changed from 00000000 to C009C801
```

## **See Also**

set ipx on - page 4-13  
set Ether0 ipxnet - page 5-6  
set W1 ipxnet - page 7-8

## **Compression**

This command sets Van Jacobson TCP/IP header compression on a network hardwired asynchronous port.

```
set S0 compression on | off
```

on	Enable compression.
off	Disable compression.

## **Usage**

Compression must be enabled or disabled the same way on both ends of a SLIP connection. For PPP connections, the PortMaster supports both bidirectional and unidirectional compression.

## **Example**

```
Command> set s0 compression on
Compression for port S0 changed from off to on
```

### ***See Also***

set S0 protocol - page 6-33  
set user compression - page 12-16  
set location compression - page 13-13

## ***Asynchronous Character Map***

This command sets the PPP asynchronous map for the interpretation of nonprinting ASCII characters found in the data stream.

set S0 map *Hex*

*Hex*

A 32-bit hexadecimal number. The default is 00000000.

### ***Usage***

The PPP protocol supports the replacement of nonprinting ASCII data in the PPP stream. These characters are not sent through the line, but instead are replaced by a special set of characters that the remote site interprets as the original characters. The PPP asynchronous map is a bit map of characters that should be replaced. The lowest-order bit corresponds to the first ASCII character NUL and so on. Most environments should set the asynchronous map to zero to achieve maximum throughput.

You can set the PPP asynchronous map for all the ports simultaneously by using the "set all map" command.

### ***Example***

Command> set s0 map c0a86000  
Async Char Map for port S0 changed from 0x0 to 0xc0a86000

### ***See Also***

set S0 protocol - page 6-33  
set user map - page 12-20  
set location map - page 13-12

## Modem Table Configuration

The Modem Table commands in Table 6-3 are used to view and configure the Modem Table, which is used to store configuration information for modems you commonly use. See also the "set modem" commands in the Asynchronous Port Configuration table.

Table 6-3 Modem Table Configuration

Command Syntax
show table modem
show modem <i>ModemName</i>
add modem <i>ModemName(short) ModemName(long) Speed String</i>
delete modem <i>ModemName</i>



**Note** – When the console diagnostic switch is up, the PortMaster does not attempt to configure the modem specified for the console port. This allows a terminal to be attached to the console even if a modem was previously attached.

### Show Table Modem

This command displays a table listing the modems currently configured in the Modem Table.

```
show table modem
```

### Usage

The list provides the names of the modems, which can then be used to display details of the modem configuration.



### Example

Command> show table modem

Short Name	Long Name	Type
att-v34	AT&TV.34	User
hayes	HayesOptimaV34	User

### See Also

show modem - page 6-41

add modem - page 6-42

delete modem - page 6-43

## Show Modem

This command shows configuration information on individual modems that are in the Modem Table.

show modem *ModemName(short)*

*ModemName(short)*

This is the short name given to the modem when the configuration information was added to the Modem Table.

### Usage

Use the modem short name in the command, exactly as it is listed in the "show table modem" response.

### Example

Command> show modem att-v34

Short Name: att-v34

Long Name: AT&TV.34

Optimal Speed: 115200

Type: User Defined

Init Script: Send Command

Wait for Reply

AT&FS0=1&W

OK

## See Also

show table modem - page 6-40  
add modem - page 6-42  
delete modem - page 6-43

## Add Modem

This command is used to add modem details and configuration information to the Modem Table.

`add modem ModemName(short) ModemName(long) Speed String`

<i>ModemName(short)</i>	An abbreviated name used to identify the modem.
<i>ModemName(long)</i>	A long name that includes modem information—for example, manufacturer or model name. Enclose name in quotation marks.
<i>Speed</i>	The DTE speed in bps.
<i>String</i>	The initialization send/expect string for the modem. Enclose the string in quotation marks. Use a “\r” for a carriage return, and a caret (^) to separate the send and expect characters in the string. The PortMaster expects “OK,” as shown in the example.

## Usage

The short and long names are chosen by the user.

## Example

Command> add modem att-v34 "AT&TV.34" 115200 "AT&FS0=1&W\r^OK"  
New script entry successfully added.  
Modem att-v34 successfully added.

## See Also

show modem - page 6-41  
show table modem - page 6-40

## Delete Modem

This command is used to delete a modem entry from the Modem Table.

delete modem *ModemName(short)*

*ModemName(short)*

The abbreviated name used to identify the modem when it was added to the Modem Table.

## Usage

Use the modem short name in the command, exactly as it is listed in the response to a "show table modem" command.

## Example

Command> delete modem att-v34  
Modem att-v34 successfully deleted.

## See Also

show modem - page 6-41  
show table modem - page 6-40





This chapter describes how to use the Command Line Interface to configure synchronous ports. Detailed command definitions follow a command summary table.

The Command Line Interface can configure a PortMaster synchronous serial port for use with a leased line, Frame Relay, ISDN or Switched 56K.

These examples are from a PM-2R, where the synchronous port is labeled W1. The synchronous ports on IRX Routers are labeled S1 through S4.

## *Displaying Synchronous Port Configuration and Status*

To display information about your configuration, use the following commands:

- show W1 - see page 3-37
- show all - see page 3-21
- ifconfig - see page 3-5
- show sessions - see page 3-40
- show netstat - see page 3-35
- show arp - see page 3-22

For general information about Command Line Interface commands, refer to Chapter 2, "Introduction."

## *Configuring Synchronous Ports*

1. At the command line, enter your synchronous port configuration information as in this example:

```
Command> set w1 network hardwired
Command> set w1 protocol frame
Command> set w1 address 192.168.7.2
```

As you press [Enter] following each command, the PortMaster responds by echoing the configuration change you have made. For example:

```
Command> set w1 protocol frame
Protocol for port W1 changed from  to frame
```

For a description of each command, refer to "Synchronous Port Configuration" on page 7-2.

2. When you finish configuring the synchronous port, enter the "save w1" command to write your configuration changes to the nonvolatile memory of the PortMaster, as follows:

```
Command> save w1
```

"save all" can also be used.

## Synchronous Port Configuration

The synchronous port commands in Table 7-1 configure synchronous serial ports. Commands marked with a leading bullet (•) can only be used for network hardwired ports.

Table 7-1 Synchronous Port Configuration

Command Syntax	
show all	- see page 3-21
show W1	- see page 3-37
save W1	- see page 3-17
reset W1	- see page 3-19
set W1 extended on   off	
set W1 network dialin   dialout   twoway   hardwired	
• set W1 protocol ppp   frame	
• set W1 address <i>Ipaddress</i>	
• set W1 netmask <i>Ipmask</i>	



Table 7-1 Synchronous Port Configuration (Continued)

Command Syntax
<ul style="list-style-type: none"> <li>• set W1 destination <i>Ipaddress</i> [<i>Ipmask</i>]</li> <li>• set W1 ipxnet <i>Ipxnetwork</i></li> <li>• set W1 routing on   off   broadcast   listen</li> <li>• set W1 ifilter <i>Filtername</i></li> <li>• set W1 ofilter <i>Filtername</i></li> <li>• set W1 mtu <i>MTU</i></li> <li>• set W1 lmi <i>Seconds</i></li> <li>• set W1 annex-d <i>Seconds</i></li> <li>• set W1 dlci <i>Dlci_list</i></li> </ul>
set W1 group <i>Group</i>
set W1 hangup on   off
set W1 idletime <i>Number</i> [minutes   seconds]
set W1 modem   cd on   off
set W1 speed 9600   14400   19200   38400   57600   76800   115200   56000   64000   1344k   1536k   2048k   t1   t1e   e1
set S0   W1 ospf on   off

- see page 11-22

## Description of Synchronous Commands

These commands affect the synchronous interface of the PortMaster. Examples in this chapter are from a PortMaster PM-2R or PM-2ER, labeled W1. The PortMaster IRX-114 uses S1 through S4 for synchronous ports. See Table 2-1, "Available Port Types by PortMaster Model," on page 2-1 for the range of synchronous ports available on each PortMaster model.

The port type is always set to "network" for synchronous ports.

## Extended

This command sets the extended mode on or off for the synchronous port.

set W1 extended on | off

on

Extended mode on.

off

Extended mode off. This is the default.

## Usage

When extended mode is on, the "show" command provides more detailed output.

## Example

Command> set w1 extended on

Extended mode for port W1 changed from off to on

## Network

This command sets the network type for the synchronous port.

set W1 network dialin | dialout | twoway | hardwired

dialin

The port accepts dial-in network connections. The remote system is required to authenticate using PAP or CHAP. Dial-in network connections are controlled by the User Table or the RADIUS server.

A remote host can connect to the port. Used for ISDN or switched 56K.

dialout

The port is available for dialing to remote destinations and initiating network connections to those destinations. Dial-out network connections are controlled by the Location Table.

The port is available for dial-out use by the Location Table using V.25bis dialing. Used for ISDN or switched 56K.

twoway	In this mode, the port accepts dial-in network connections, as well as being available for dial-out to remote destinations.
hardwired	This mode is for ports being used in a dedicated network connection between two sites. No modem dialing or authentication is required. The port immediately begins running the specified protocol. The port is connected to a synchronous leased line or Frame Relay using a V.35 or suitable RS-232 cable. Refer to the appropriate hardware configuration guide for more information.

### ***Usage***

Network service parameters are set on the port when hardwired, in the User Table or by RADIUS for dial-in users, and in the Location Table for dial-out locations.

### ***Example***

```
Command> set w1 network hardwired
Port type for port W1 changed from Netwrk to Network(hardwired)
```

### ***See Also***

set S0 network - page 6-10

## ***Protocol***

This command sets the transport protocol for a network hardwired synchronous port.

```
set W1 protocol ppp | frame
```

ppp	PPP. Used for leased lines, ISDN, and switched 56K connections.
frame	Frame Relay.



## Usage

Select PPP for direct leased line connections between routers, for ISDN, or for switched 56K. Select Frame Relay when attaching the port to a Frame Relay network via a Frame Relay switch. This command is only used for network hardwired ports.

## Example

Command> set w1 protocol ppp  
Protocol for port W1 changed from frame relay to ppp

## See Also

set debug - page 3-12  
set W1 lmi - page 7-12  
set W1 annex-d - page 7-13

## Address

This command sets the local IP address of the network hardwired synchronous port to create a numbered interface.

set W1 address *Ipaddress*

*Ipaddress*                      IP address

## Usage

If the local IP address of the port is set to 0.0.0.0 for PPP, the PortMaster will use the Ether0 IP address for this end of the serial link. If set to 0.0.0.0 for Frame Relay, the port is disabled.

## Example

Command> set w1 address 192.168.7.2  
Port W1 local address changed from 0.0.0.0 to 192.168.7.2

## See Also

set S0 address - page 6-34

## Netmask

This command sets the IP netmask of the remote router for a network hardwired synchronous port.

set W1 netmask *Ipmask*

*Ipmask*

IP netmask

## Usage

Only used on network hardwired ports.

## Example

Command> set w1 netmask 255.255.255.0

W1 netmask changed from 0.0.0.0 to 255.255.255.0

## See Also

set Ether0 netmask - page 5-4

set S0 netmask - page 6-34

## Destination

This command sets the IP address of the remote router and the netmask for a network hardwired synchronous port.

set W1 destination *Ipaddress* [*Ipmask*] •

*Ipaddress*

IP address of the remote router

*Ipmask*

IP mask

## Usage

If the destination is set to 255.255.255.255 for PPP connections, the PortMaster attempts to learn the remote IP address. If set to 0.0.0.0, the port is disabled.

### **Example**

Command> set w1 destination 255.255.255.255  
Port W1 destination changed from 0.0.0.0 to 255.255.255.255

### **See Also**

set S0 destination - page 6-35

## **IPX Network**

This command sets the IPX network number for the point-to-point connection on a network hardwired synchronous port.

set W1 ipxnet *Ipxnetwork*

*Ipxnetwork*            IPX network number. A 32-bit hexadecimal value.

### **Usage**

IPX traffic can be passed through a port if you assign an IPX network number to the hardwired network connection. The serial link itself must have an IPX network number that is different from those at each end of the Ethernet.

### **Example**

Command> set w1 ipxnet C009C801  
Port W1 ipxnet changed from 00000000 to C009C801

### **See Also**

set ipx on - page 4-13  
set Ether0 ipxnet - page 5-6  
set S0 ipxnet - page 6-37



## Routing

This command sets RIP routing options for a network hardwired synchronous port.

set W1 routing on | off | broadcast | listen

on	The PortMaster sends and listens for route information on this port. This is the default.
off	The PortMaster neither sends nor listens for route information on this port.
broadcast	The PortMaster sends route information on this port.
listen	The PortMaster listens for route information on this port.

## Usage

The PortMaster automatically sends and listens for RIP packets to and from the hardwired port if routing is turned on.

## Example

Command> set w1 routing on

Routing for port W1 changed from off (no\_broadcast,no\_listen) to on (broadcast,listen)

## See Also

set S0 routing - page 6-37

## Input Filter

This command sets an input packet filter for packets entering the PortMaster on a network hardwired synchronous port from a leased line or Frame Relay.

set W1 ifilter *Filtername*

<i>Filtername</i>	Input filter name that is in the Filter Table.
-------------------	--

## Usage

When specified on a network hardwired synchronous port, all packets received from the interface will be evaluated against the rule set for this filter. Only packets that are permitted by this filter will be allowed to enter the PortMaster. It should only be set on network hardwired ports. If the filter is changed, the port must be reset for the change to take effect.

This setting is not used for dial-in and dial-out networking; filters for dial-in users are set in the User Table or RADIUS, and filters for dial-out locations are set in the Location Table.

You remove the filter by entering the command without a filter name.

## Example

```
Command> set w1 ifilter internet.in
Input filter for port W1 changed from  to internet.in
```

## See Also

set W1 ofilter - page 7-10  
add filter - page 14-5  
show table filter - page 14-4

## Output Filter

This command sets a packet filter for packets exiting the PortMaster on a network hardwired synchronous port.

```
set W1 ofilter Filtername
```

*Filtername*

Output filter name that is in the Filter Table.

## Usage

When specified, all packets being sent to the network hardwired port will be evaluated against the rule set for this filter. Only packets permitted by this filter will be allowed to leave the PortMaster. It should only be set on network hardwired ports. If the filter is changed, the port must be reset for the changes to take effect.

You remove the filter by entering the command without a filter name.

### ***Example***

Command> set w1 ofilter w1.out  
Output filter for port W1 changed from to w1.out

### ***See Also***

set W1 ifilter - page 7-9  
add filter - page 14-5  
show table filter - page 14-4

## ***MTU***

This command sets the maximum transmission unit (MTU) for the network hardwired synchronous port.

set W1 mtu MTU

MTU                      Valid values for MTU are between 100 and 1520.

### ***Usage***

The MTU defines the largest frame or packet that can be sent through this port. A packet that exceeds this value is automatically fragmented if IP, or discarded if IPX. Set the MTU only on network hardwired ports.

### ***Example***

Command> set w1 mtu 1500  
MTU for port W1 changed from 0 to 1500

### ***See Also***

set W1 protocol - page 7-5



## ***LMI***

This command sets the Local Management Interface (LMI) polling interval for a network hardwired synchronous port to allow the Frame Relay switch to monitor link status. Check with your Frame Relay service provider to determine whether they use LMI or Annex-D; both may be referred to as LMI.

*set W1 lmi Seconds*

*Seconds*

Keepalive interval in seconds

## ***Usage***

When used, the LMI default value is 10 seconds. However, if your telephone company chooses another keepalive value, change this value as they instruct you. Annex-D keepalives are also available. Enabling LMI (or Annex-D) causes the data link connection identifier (DLCI) list to be completed automatically. You can display LMI activity using the "set debug 0x51" command.

## ***Example***

Command> set w1 lmi 10

LMI keepalive timer for W1 changed from 0 to 10

## ***See Also***

set W1 annex-d - page 7-13

set W1 dlci - page 7-13

set debug - page 3-12

## Annex-D

This command sets the Annex-D polling interval for a network hardwired synchronous port to allow the Frame Relay switch to monitor link status. Check with your Frame Relay service provider to determine whether they use LMI or the newer Annex-D; both may be referred to as LMI.

set W1 annex-d *Seconds*

*Seconds*

Keepalive interval in seconds. Default is 10.

### Usage

The Annex-D default value is 10 seconds. However, if your telephone company chooses another value, change this value as they instruct you. Enabling Annex-D (or LMI) causes the DLCI list to be completed automatically. Setting the interval to zero seconds, or enabling LMI, disables Annex-D.

### Example

Command> set w1 annex-d 10

ANNEX-D keepalive timer for S1 changed from 0 to 10

### See Also

set W1 lmi - page 7-12

set W1 dlci - page 7-13

set debug - page 3-12

## DLCI List

Use this command to enter DLCIs for Frame Relay service on a network hardwired synchronous port. If LMI or Annex-D is not used, you must enter the DLCI list manually. Your Frame Relay service provider might provide a DCLI list.

set W1 dlci *Dlci\_list*

*Dlci\_list*

Space separated list of DLCIs. Up to a maximum of 240 characters.



## Usage

When using Frame Relay, you can enter a list of DLCIs accessible through this interface via the Frame Relay Network. The PortMaster will attempt to use Inverse ARP requests to learn the IP addresses of routers attached to the permanent virtual circuits (PVCs) represented by these DLCIs. Alternatively, you can specify IP addresses by appending a colon (:) and IP address after the DLCI. If an address is specified, the PortMaster will statically configure that entry into its ARP table for this interface. With LMI or Annex-D, DLCIs can be learned dynamically.

## Example

```
Command> set w1 dlci 16 17 18  
New DLCI List: 16 17 18
```

```
Command> set w1 dlci 16:192.168.2.1 17:192.168.2.3  
New DCLI List: 16:192.168.2.1 17:192.168.2.3
```

## See Also

set W1 lmi - page 7-12  
set W1 annex-d - page 7-13  
add dlci - page 13-27

## Group

This command assigns synchronous ports to pools for use by V.25bis dial-out locations. A group number is referenced by each location in the Location Table. See page 13-12 for more information.

```
set W1 group Group
```

Group

Group number, from 0 to 99. Default is 0

## Usage

In order for pools to work, each port must be assigned to a dial group, and each location must specify a dial group.

## Example



Command> set w1 group 1  
Group number for port W1 changed from 0 to 1

### ***See Also***

set S0 group - page 6-20  
set location group - page 13-12

## ***Hangup***

This command controls whether the DTR signal on the synchronous port is dropped for 500 milliseconds, to cause a hangup after the termination of a user session.

set W1 hangup on | off

on                      DTR is dropped after the session terminates. This is the default.

off                     DTR is not dropped after the session terminates.

### ***Usage***

Resetting the port administratively, using the "reset" command, always drops the DTR signal.

### ***Example***

Command> set w1 hangup on  
DTR Hangup for port W1 changed from off to on

### ***See Also***

reset W1 - page 3-19

## Idle Timeout

This command indicates how long the PortMaster should wait after activity stops on the synchronous port before disconnecting.

set W1 idletime *Number* [minutes | seconds]

<i>Number</i>	Idle time value in minutes or seconds, as specified. Any value from 0 to 240. The default value is 0.
minutes	Sets the idle time in minutes. This is the default.
seconds	Sets the idle time in seconds.

## Usage

If the idle timeout value is set to 0 or 1 minute, the idle timer is disabled.

If the value is set in seconds or minutes to 2 or higher, the port is reset after having no traffic for the designated time. RIP packets are not counted as traffic.

## Example

```
Command> set w1 idletime 120  
Idle timeout for W1 changed from 0 to 120
```

## See Also

set W1 modem - page 7-17

## Modem Control

This command enables the PortMaster to monitor the presence of the data carrier detect (DCD) signal on a modem attached to the synchronous port to determine whether the line is in use.

set W1 modem | cd on | off

- |     |  |
|-----|--|
| on  | Monitor presence of the carrier detect signal.               |
| off | Do not monitor presence of the carrier. This is the default. |

## Usage

Modem control defaults to "off" for synchronous connections. In this default state, the PortMaster assumes the carrier detect line is always high.

This parameter should be set to "on" only if you want to make use of the DCD signal from the attached device. When set to "on," the PortMaster uses the signal to determine if the line is in use.

For leased lines or Frame Relay, this control is usually set to "off," but can be turned on if the CSU/DSU is configured accordingly.

## Example

Command> set w1 modem on  
CD required for port W1 changed from off to on

## See Also

set S0 modem | cd - page 6-18



## ***Speed***

This command sets the reference speed for the synchronous port.

```
set W1 speed 9600 | 14400 | 19200 | 38400 | 57600 | 76800 | 115200 |  
56000 | 64000 | 1344k | 1536k | 2048k | t1 | t1e | e1
```

9600 | 14400, etc.      Indicates DTE rate in bits per second.

t1, t1e, e1            Reference for T1, extended superframe T1, or E1 line types.

## ***Usage***

The external clock on the device to which the PortMaster is connected, or the telco network, sets the actual line speed. Speed or line type settings on synchronous ports are for administrative notation only and do not affect the operation of the port.

## ***Example***

```
Command> set w1 speed 64000  
Speed for port W1 changed from 9600 to 64000
```

## ***See Also***

set S0 speed - page 6-11

This chapter describes how to use the Command Line Interface to configure the P0 parallel port included in some of the PortMaster models. Detailed command definitions follow a command summary table.

## *Displaying Parallel Port Settings*

The following command is available to show the configuration of the parallel port:

- show p0 - see page 3-37

## *Configuring Parallel Port Settings*

To configure port settings:

1. At the command line, enter your global settings, as in this example:

```
Command> set p0 extended on  
Command> set p0 disabled  
Command> reset p0
```

As you press [Enter] following each command, the PortMaster responds by echoing the configuration change you have made. For example:

```
Command> set p0 disconnect 240  
Disconnect timeout for port P0 changed from 120 to 240
```

2. For a description of each command, refer to "Description of Parallel Port Commands" on page 8-3.

3. When you finish configuring the port settings, enter the “save p0” command to write your configuration changes to the nonvolatile memory of the PortMaster, as follows:

```
Command> save p0
```

“save all” can also be used.

## Summary of Parallel Port Commands

The parallel port commands in Table 8-1 configure the parallel port P0. See Table 2-1, on page 2-1, for the range of ports available on each PortMaster model.

Table 8-1 Parallel Port Configuration

Command Syntax	
show all	- see page 3-21
show p0	- see page 3-37
save p0	- see page 3-19
reset p0	- see page 3-19
set p0 extended on   off	
set p0 device <i>Device</i>	
set p0 disabled	
set p0 service_device netdata   portmaster   rlogin   telnet [ <i>Tport</i> ]	
set p0 host default   <i>Ipaddress</i>	
set p0 disconnect <i>Seconds</i>   infinity	



## Description of Parallel Port Commands

These commands are used to configure the parallel port (P0) of the PortMaster.

### Extended

This command sets the extended display mode on or off for the parallel port.

set p0 extended on | off

on	Extended mode on.
off	Extended mode off. This is the default.

### Usage

When extended mode is on, the “show” command provides more detailed output.

### Example

Command> set p0 extended on  
Extended mode for port P0 changed from off to on

### Device

This command sets the parallel port to operate as a host-controlled device.

set p0 device *Device*

<i>Device</i>	Device designation—for example, /dev/ttyrf
---------------	--

### Usage

In the following example, a PortMaster host device (/dev/ttyrd) is shown. To use the PortMaster device service, you must have the PortMaster “in.pmd” daemon installed on the specified host.

### **Example**

Command> set p0 device /dev/ttyrd  
Port type for port P0 changed from Device to Host Device(/dev/ttyrd)

### **Disabled**

This command disables the parallel port.

set p0 disabled

### **Usage**

This command disables the parallel port. To enable the port, set it as a host device—for example, “set p0 device /dev/ttyrd.”

### **Example**

Command> set p0 disabled  
Port type for port P0 changed from Device to Disabled

### **See Also**

set p0 device - page 8-3

### **Device Service**

This command indicates device service to be used by the parallel port.

set p0 service\_device netdata | portmaster | rlogin | telnet [*Tport*]

netdata	Allow netdata connections to this port from the network.
portmaster	Used for host device emulation from a host with the “in.pmd” daemon installed.
rlogin	Allow rlogin connections to this port from the network.
telnet	Allow Telnet connections to this port from the network.
<i>Tport</i>	The designated TCP port on the host.

## ***Usage***

The host device must be set as the port type for any port that is to act as a host-controlled device on a workstation. This capability allows users to connect through the PortMaster to shared devices such as printers.

## ***Example***

```
Command> set p0 service_device portmaster
Device Service for port P0 changed from  to portmaster
```

## ***See Also***

set p0 device - page 8-3

## ***Host***

This command sets the device host for the parallel port.

```
set p0 host default | Ipaddress
```

*default*                      Use the default host as device host.

*Ipaddress*                    IP address or host name of device host.

## ***Usage***

The host must have the "in.pmd" daemon installed.

## ***Example***

```
Command> set p0 host 192.168.200.2
Host changed from default to 192.168.200.2 for P0
```

## ***See Also***

set host - page 4-5



## ***Disconnect***

This command sets the disconnect timeout for the parallel port.

set p0 disconnect *Seconds* | infinity

*Seconds*                      Number of seconds. Default is 120.

infinity                      Infinite timeout. This effectively disables a disconnect timeout.

## ***Usage***

The timeout feature disconnects a session from the port when the port has been inactive (flow control) for the designated time. The port is then available for other sessions. The infinite timeout is useful, for example, for printers that go offline when they run out of paper, but that you do not want to disconnect and thereby terminate the print job.

## ***Example***

Command> set p0 disconnect 240

Disconnect timeout for port P0 changed from 120 to 240

This chapter describes how to use the Command Line Interface to configure ISDN BRI ports. Detailed command definitions follow a command summary table.

Examples in this chapter are from a PortMaster PM-2ER, which uses the indicator S10 for the first ISDN BRI port when an ISDN expansion module is present. PortMasters also use other designations for ISDN BRI ports, depending on the model and configuration. Refer to Table 2-1, "Available Port Types by PortMaster Model," on page 2-1, for the range of ISDN BRI ports available on PortMaster models.

## *Displaying ISDN Port Data*

To display ISDN debug information on the console, use the following commands:

- set console - see page 3-15
- set debug isdn on - see page 3-12

For general information about using the Command Line Interface, refer to Chapter 2, "Introduction."

## *Configuring BRI Ports*

1. At the command line, enter your ISDN port configuration information as in the example:

```
Command> set isdn-switch ni-1
Command> set s10 spid 700555111100
Command> set s11 spid 700555111201
Command> set s10 dn 7005551111
Command> set s11 dn 7005551112
```

As you press [Enter] following each command, the PortMaster responds by echoing the configuration change you have made. For example:

```
Command> set s10 spid 700555111100
SPID for port S10 changed from  to 700555111100
```

For a description of each command, refer to "Description of ISDN BRI Commands" on page 9-4.

2. When you finish configuring the ISDN port, enter the "save s10" command to write your configuration changes to the nonvolatile memory of the PortMaster, as follows:

```
Command> save S10
```

"save all" can also be used.

## Summary of ISDN BRI Commands

ISDN BRI commands allow you to configure the switch provisioning values, including the SPID and the directory number (DN). The commands are shown in Table 9-1, where those marked with a leading bullet (•) are specifically for ISDN configuration, and are described in this chapter. Additionally, ISDN BRI ports can be configured similarly to asynchronous and synchronous ports. References are given for the port commands not described here.

Table 9-1 ISDN Port Commands

Command Syntax	
show all	- see page 3-21
show isdn	- see page 3-29
show S10	- see page 3-37
save S10	- see page 3-17
reset S10	- see page 3-19
• set isdn-switch ni-1   dms-100   5ess   5ess-ptp	
• set isdn-switch net3   vn2   vn3   vn4   1tr6   ntt   kdd	



Table 9-1 ISDN Port Commands (Continued)

Command Syntax	
set S10 extended on   off	- see page 6-6
set S10 login [device <i>Device</i> ] [network dialin   dialout   twoway]	- see page 6-6
set S10 device <i>Device</i> [network dialin   dialout   twoway]	- see page 6-8
set S10 twoway <i>Device</i> [network dialin   dialout   twoway]	- see page 6-9
set S10 network dialin   dialout   twoway	- see page 6-10
• set S10 spid <i>Number</i>	
• set S10 directory   dn <i>Number</i>	
set S10 group <i>Group</i>	- see page 6-20
set S10 idletime <i>Number</i> [seconds   minutes]	- see page 6-20
set S10 security on   off	- see page 6-21
set S10 message <i>String</i>	- see page 6-22
set S10 prompt <i>String</i>	- see page 6-23
set S10 username   autolog <i>String</i>	- see page 6-24
set S10 hangup on   off	- see page 6-24
set S10 dialback_delay <i>Seconds</i>	- see page 6-25
set S10 service_login netdata   portmaster   rlogin   telnet [ <i>Tport</i> ]	- see page 6-27
set S10 service_device netdata   portmaster   rlogin   telnet [ <i>Tport</i> ]	- see page 6-28
set S10 host default   prompt   <i>Ipaddress</i>	- see page 6-29
set S10 termtype <i>String</i>	- see page 6-30
set S10 ifilter <i>Filtername</i>	- see page 6-31
set S10 ofilter <i>Filtername</i>	- see page 6-32

## Description of ISDN BRI Commands

These commands are used for configuring the ISDN BRI ports of the PortMaster. Table 2-1, "Available Port Types by PortMaster Model," on page 2-1 lists the range of ISDN ports available on each PortMaster model.

### ISDN Switch

This command sets the switch provisioning for ISDN connections to the PortMaster ISDN ports.

```
set isdn-switch ni-1 | dms-100 | 5ess | 5ess-ptp
```

```
set isdn-switch net3 | vn2 | vn3 | vn4 | 1tr6 | ntt | kdd
```

ni-1	National ISDN-1 (NI-1) compliant. This is the default.
dms-100	Northern Telecom DMS-100 Custom.
5ess	AT&T 5ESS Custom Multi-Point
5ess-ptp	AT&T 5ESS Custom Point-to-Point.
net3	European ISDN standard (includes Swiss extensions)
vn2	France - Older switch
vn3	France - Older switch
vn4	France - Current National switch
1tr6	Germany - Older switch
ntt	Japan
kdd	Japan

## ***Usage***

The switch provisioning information is available from your ISDN telephone service provider. DMS-100 and 5ESS switches can operate with either switch-specific software, or the more universal NI-1 software. When they have NI-1 software, you must use the NI-1 value. Any change you make in the switch provisioning setting does not take effect until the PortMaster is rebooted.

## ***Examples***

For an AT&T 5ESS Custom Multi-Point switch with switch-specific software:

```
Command> set isdn-switch 5ess  
ISDN switch type set to ATT-5ESS  
Command> save all  
Command> reboot
```

For an AT&T 5ESS Custom Multi-Point switch with NI-1 software:

```
Command> set isdn-switch ni-1  
ISDN switch type set to NI-1  
Command> save all  
Command> reboot
```

## ***See Also***

set S10 spid - page 9-6  
set S10 directory - page 9-7



## ***SPID***

This command sets the Service Profile Identifier (SPID) numbers for the bearer (B) channels of the ISDN connection. The SPID numbers for each of the two B channels are provided by your ISDN service provider.

*set S10 spid Number*

*S10*

The ISDN port.

*Number*

A number with 9 to 20 digits, provided by the ISDN service provider.

## ***Usage***

The SPID numbers for the two B channels are normally different, and both of the corresponding PortMaster ports need to be configured with the correct SPID number.

## ***Example***

Command> set s10 spid 700555111100

SPID for port S10 changed from   to 700555111100

## ***See Also***

set s10 dn - page 9-7

set isdn-switch - page 9-4

## DN

This command is used to set the directory number (DN) for a port. DNs are provided by your ISDN telephone service provider. If set, an incoming call that matches this number uses this port.

*set S10 directory | dn Number*

*s10*                      The ISDN port

*Number*                The access telephone number

## Usage

The directory numbers for the two B channels are normally different, and both of the corresponding PortMaster ports need to be configured with the correct directory number.

## Example

Command> set s10 directory 5105551212  
Directory No for port S10 changed from    to 5105551212

Command> set s11 dn 5105551213  
Directory No for port S11 changed from    to 5105551213

## See Also

set s10 spid - page 9-6  
set isdn-switch - page 9-4





This chapter describes how to use the Command Line Interface to configure the ISDN PRI line0 and line1 on the PortMaster 3. The PortMaster 3 can also use many of the commands common to all PortMaster models; for more information, refer to the *Configuration Guide for PortMaster Products*.



**Note** – After making any configuration changes to a line (line0 or line1), you must use the “save all” and “reboot” commands for the changes to take effect.

## Displaying Diagnostic Information

To display ISDN debug information on the console, use the following commands:

- set console - see page 3-15
- set debug isdn on - see page 3-12
- set debug isdn-d on - see page 3-12

When finished, use the following commands:

- set debug off - see page 3-12
- reset console - see page 3-19

To display line configuration or status, use the following commands:

- show global - see page 3-26
- show *Line0* - see page 3-30
- show modems

## Configuring PortMaster 3 Lines

1. Set the type of line, then save all and reboot before continuing the configuration, as follows:

```
Command> set line0 isdn  
Command> save all  
Command> reboot
```

As you press [Enter] following each command, the PortMaster responds by echoing the configuration change you have made.

2. If the line uses ISDN, enter your ISDN switch type. For example:

```
Command> set isdn-switch att-5ess  
ISDN switch type set to ATT-5ESS
```

For installations that limit their use to ISDN, this step completes the only required configuration. The default factory settings, described in "Description of ISDN PRI Commands" on page 10-4, are applicable to the most common situations.

3. When you finish configuring the line, again enter the "save all" command to write your configuration changes to the nonvolatile memory of the PortMaster, and reboot as follows:

```
Command> save all  
Command> reboot
```

## Summary of PortMaster 3 Line Commands

The line configuration commands are shown in Table 10-1.

Table 10-1 Line Configuration Commands

Command Syntax	
show <i>Line0</i>	- see page 3-30
show modems	
save all	- see page 3-17
set <i>Line0</i> isdn   t1   e1   fractional	
set isdn-switch ni-2   dms-100   att-4ess   att-5ess	
set isdn-switch net5   vn2   vn3   1tr6   ntt   kdd	
set <i>Line0</i> framing esf   d4   crc4   fas   none	
set <i>Line0</i> encoding b8zs   ami   hdb3	
set <i>Line0</i> pcm u-law   a-law	
set <i>Line0</i> group <i>Cgroup</i>   none channels <i>Channel-list</i>	
set <i>Line0</i> group <i>Cgroup</i> 56k   64k	
set <i>M0</i> on   off	
set <i>S0</i> directory <i>Number</i>	



## Description of ISDN PRI Commands

These commands are used for configuring the ISDN PRI T1 or E1 lines of the PortMaster 3.

### Line Use

This command allows you to use a line as a single T1 or E1 line or as PRI B channels, or to divide the line into groups for use with the "set group" command.

set *Line0* isdn | t1 | e1 | fractional

<i>Line0</i>	line0 or line1.
isdn	Use the line as PRI B channels. This is the default.
t1	Use the entire line as a T1.
e1	Use the entire line as an E1.
fractional	Divide the line into groups specified by the "set group" command, see page 10-8.

### Example

```
Command> set line0 t1  
line0 changed to T1
```

### See Also

set Line0 group - page 10-8.

## ISDN Switch

This command sets the switch type for ISDN connections to the PortMaster ISDN PRI ports. The switch type information is available from your ISDN PRI service provider.

```
set isdn-switch ni-2 | dms-100 | att-4ess | att-5ess
```

```
set isdn-switch net5 | vn2 | vn3 | 1tr6 | ntt | kdd
```

ni-2	National ISDN-2 (NI-2) compliant
dms-100	Northern Telecom DMS-100
att-4ess	AT&T 4ESS
att-5ess	AT&T 5ESS
net5	European ISDN PRI standard
vn2	France
vn3	France
1tr6	Germany
ntt	Japan
kdd	Japan

### Example

```
Command> set isdn-switch att-5ess  
ISDN switch type set to ATT-5ESS
```

## ***Framing Format***

This command sets the framing format used for the line.

set *Line0* framing esf | d4 | crc4 | fas | none

<i>Line0</i>	line0 or line1.
esf	Extended superframe. This is the default format for T1 PRI lines.
d4	D4 framing, alternative format for T1 PRI lines.
crc4	Cyclic redundancy check 4. This is the default format for E1 PRI lines.
fas	Frame Alignment Signal, alternative format for E1 PRI lines.
none	No framing, used for clear channel bit stream.

### ***Example***

Command> set line0 framing esf  
line0 framing successfully changed



## Encoding Method

This command sets the encoding method used with T1 and E1 lines.

set *Line0* encoding b8zs | ami | hdb3

<i>Line0</i>	line0 or line1.
b8zs	Bipolar 8 zero substitution. This is the default for T1 PRI lines.
ami	Alternate mark inversion.
hdb3	High-density bipolar 3. This is the default for E1 PRI lines.

### Example

Command> set line0 encoding b8zs  
line0 encoding successfully changed

## Pulse Code Modulation

This command sets the digital encoding method used for analog signals.

set *Line0* pcm u-law | a-law

<i>Line0</i>	line0 or line1
u-law	The default method for T1 PRI lines
a-law	The default method for E1 PRI lines

### Usage

This command is only needed when you are using digital modems in the PortMaster 3. The default settings should not be changed unless your PRI service provider instructs you otherwise.

### Example

Command> set line0 pcm u-law  
line0 PCM encoding changed to u-law

## Channel Groups

This command allows you to divide the T1 or E1 lines into groups, after the line type has been set to "fractional" with the "set line0" command.

set *Line0* group *Cgroup* | none channels *Channel-list*

<i>Line0</i>	line0 or line1.
<i>Cgroup</i>	A group number from w2 to w63, or "none" to unassign channels.
<i>Channel-list</i>	A space separated list of one or more channel numbers, from 1 through 24 for T1, or 1 through 30 for E1. The channel numbers do not have to be contiguous.

### Example

To allocate channels 1 through 4 of line0 to 256-Kbps synchronous port W2, use the following commands:

```
Command> set line0 fractional
Command> save all
Command> reboot
Command> set line0 group w2 channels 1 2 3 4
Command> set line0 group w2 64k
Command> save all
Command> reboot
```

Now configure W2 as you would any other PortMaster synchronous port.

### See Also

set Line0 - page 10-4  
set Line0 group - page 10-8



## Channel Rate

This command allows you to set the channel rate for a group to 56 Kbps or 64 Kbps.

set *Line0* group *Cgroup* 56k | 64k

<i>Line0</i>	line0 or line1.
<i>Cgroup</i>	A defined group from w2 to w63.
56k	56 Kbps, typically used for D4 framing.
64k	64 Kbps, used for framing types other than D4. This is the default.

## See Also

set *Line0* group - page 10-8

## Modems

This command allows you to make the digital modems on the PortMaster 3 available or unavailable.

set *M0* on | off

<i>M0</i>	Any modem number from m0 to m59. Changes to the default setting must be made to individual modems.
on	Make the modem available for use. This is the default.
off	Busy the modem so it is unavailable.

## Usage

The digital modems are numbered from m0 to m59, for a maximum of 60 modems. Modem slot 0 is allocated numbers m0 through m9, modem slot 1 is allocated numbers m10 through m19, and so on. Whether eight-port or ten-port modem cards are installed, the allocation of numbers to the modem slots does not change. For example, an eight-port modem card installed in modem slot 0 would have modems numbered m0 through m7. Modems on any card installed in modem slot 1 would then start their numbering at m10, with no modems using the labels m8 and m9.



## ***Directory Number***

This command sets a telephone number for an individual port when the line is configured as ISDN B channels.

set S0 directory *Number*

S0

An ISDN port

*Number*

The access telephone number

## ***Usage***

Normally a T1 or E1 line has a single telephone number, however, when the line is set up as ISDN B channels this optional command can be used to set a telephone number for an individual port. If set, it allows you to identify the circuit telephone number associated with a specific ISDN port.

## ***Example***

Command> set s0 directory 5105551212

Directory No for port S0 changed from to 5105551212

## ***See Also***

set Line0 - page 10-4

This chapter describes how to use the Command Line Interface to configure the PortMaster when using the Open Shortest Path First (OSPF) routing protocol.

Large OSPF routing tables may require the PortMaster to be upgraded to 4 or 16 megabytes of memory. See your hardware installation guide for more information.



**Note** – After making any configuration changes to the OSPF configuration, you must use the “save all” and “reboot” commands for the changes to take effect.

## *Displaying OSPF Information*

To display OSPF information on the console, use the following commands:

- show global - see page 3-26
- show routes - see page 3-36
- show memory - see page 3-32
- ifconfig - see page 3-5, and below
- show ospf areas
- show ospf links
- show ospf neighbors

For general information about using the Command Line Interface, refer to Chapter 2, “Introduction.”

## Configuring OSPF

1. At the command line, enter your OSPF configuration information as in the following example:

```
Command> set ospf enable
Command> save all
Command> reboot
Command> set ospf priority 1
Command> add ospf area 0.0.0.0
Command> set ospf area 0.0.0.0 range 192.168.1.1/24 quiet
Command> set ospf area 0.0.0.0 external on
```



**Note** – You must issue the “save all” and “reboot” commands (as shown in the example above) immediately after issuing the “set ospf enable” command, before you can continue with the OSPF configuration.

As you press [Enter] following each command, the PortMaster responds by echoing the configuration change you have made. For example:

```
Command> set ospf area 0.0.0.0 external on
Area successfully updated
```

For a description of each command, refer to “Description of OSPF Commands” on page 11-4.

2. When you finish the OSPF configuration, enter the “save ospf” command to write your configuration changes to the nonvolatile memory of the PortMaster, and reboot as follows:

```
Command> save ospf
Command> reboot
```

“save all” can also be used.





**Note** – The examples in this chapter show OSPF areas in dotted quad notation; however, you can also use decimal notation. In the following example, the backbone area is entered in decimal notation:

```
Command> add ospf area 0
```

## Summary of OSPF Commands

OSPF commands allow you to configure the PortMaster to use the OSPF IP routing protocol.

*Table 11-1 OSPF Commands*

Command Syntax	
show ospf areas	
show ospf links [router   network   summary   external]	
show ospf neighbor	
save ospf	
ifconfig	- see page 3-5 and below
set ospf enable   disable	
set ospf priority <i>Number</i>	
add ospf area <i>Area</i>	
delete ospf area <i>Area</i>	
set ospf area <i>Area</i> range <i>Ipaddress/NM</i> [advertise   quiet   off]	
set ospf area <i>Area</i> external on   off	
set ospf area <i>Area</i> stub-default-cost <i>Cost</i>	
add route <i>Ipaddress/NM IpAddress(gw) Metric</i>	
set ospf area <i>Area</i> password <i>String</i>	
set ospf area <i>Area</i> md5 <i>Number String</i>	
set ospf router-id <i>IpAddress   Number</i>	

Table 11-1 OSPF Commands (Continued)

Command Syntax
set <i>Ether0</i> ospf accept-rip on   off
set <i>Ether0</i> ospf on   off
set <i>S0 W1</i> ospf on   off
set location <i>Locname</i> ospf on   off
set debug ospf-hello   ospf-event   ospf-lsu   ospf-lsa   ospf-max on   off

## Description of OSPF Commands

These commands are used for configuring OSPF routing protocol on the PortMaster.



**Note** – The order of OSPF configuration is very important. First enable the use of OSPF on the PortMaster, then set priority (and router ID if desired), then set areas and ranges, and finally enable OSPF for the interfaces.

## Show OSPF Areas

Shows information on the configured OSPF areas.

```
show ospf areas
```

## Examples

1. A transit area (External Routes = Yes) with simple password authentication and a key of "abcd."

```
Command> show ospf areas
```

Area	Network Range	Authentication			External Routes	Stub Default Cost
		Type	ID	Key		
192.168.96.0	192.168.96.0/24 172.16.1.0/24 192.168.1.0/24	Password		abcd	Yes	N/A



2. A stub area (External Routes = No), with an MD5 secret of "defg," a key ID of 15, a default route (0.0.0.0), and a cost of 3, being injected into the stub area.

Command> show ospf areas

Area	Network Range	Authentication			External Routes	Stub Default Cost
		Type	ID	Key		
192.168.97.0	192.168.97.0/24 172.16.1.0/24 192.168.1.0/24	MD5	15	defg	No	3

3. A stub area, with no default route, a current MD5 secret of "defg," and an MD5 key ID of 15, being injected into the stub area. This router has learned of two other keys since the last "reset ospf" or "reboot" command: key ID 5 with a secret of "oldkey," and key ID 3 with a secret of "olderkey."

Command> show ospf areas

Area	Network Range	Authentication			External Routes	Stub Default Cost
		Type	ID	Key		
192.168.97.0	192.168.97.0/24 *172.16.1.0/24 *192.168.1.0/24	MD5 MD5 MD5	15 5 3	defg oldkey olderkey	No	Not Set

## Explanation

Area	Configured area.
Network Range	The list of network ranges configured for the area. Corresponds to entries given in "set ospf area range" on page 11-13. An asterisk (*) in front of the network range shows that the range is "active"—indicating that there are one or more networks learned via OSPF intra-area routes that fall into that range. The range, therefore, is supported by those networks, and can be advertised as an interarea route to other OSPF areas.
Authentication:	Type      Type of authentication: password or MD5.
	ID        Key ID number for the MD5 authentication.



	<b>Key</b>	The password or MD5 secret used to authenticate with neighbors in this area. See "set ospf area password" on page 11-17, and "set ospf area md5" on page 11-18.
<b>External Routes</b>		Indicates if external routes are flooded into this area. A "No" value indicates that the area is a stub area. A "Yes" value indicates that the area is a transit area. See the "set ospf area external" command on page 11-14.
<b>Stub Default Cost</b>		The cost given to the stub route.

## Show OSPF Links

Shows a summary of the OSPF database with one line per link state advertisement (LSA).

show ospf links [router | network | summary | external]

<b>router</b>	Provides more detail for router links
<b>network</b>	Provides more detail for network links
<b>summary</b>	Provides more detail for summary links
<b>external</b>	Provides more detail for external links

## Example

Command> show ospf links

Router Links for Area 0.0.0.0

Link ID	Advertising Router	Sequence	TOS	Ext	Age
192.168.1.1	192.168.1.1	0x8000009d	No	No	459
192.168.1.2	192.168.1.2	0x800000b9	No	No	672
192.168.1.3	192.168.1.3	0x800000c5	No	No	1709
192.168.1.5	192.168.1.5	0x800000b8	No	No	398

## ***Explanation***

Link ID	For router links, it identifies the router address. For network links, it identifies the designated router address. For summary and external links, it identifies the network address advertised by the route that those links represent.
Advertising Router	OSPF router ID of the advertisement's originator.
Sequence	The link state sequence number used to detect old and duplicate link state advertisements (LSAs). Typically, the larger the sequence number, the newer the advertisement. When a router is rebooted, it may see its old advertisements still known to other routers. If so, the router then brings itself up-to-date by flooding the network with a new advertisement with a sequence number larger than that used in the old LSAs.
TOS	Type of service YES - This router supports TOS. NO - This router does not support TOS. Currently only the TOS 0 metric is supported. For more information on TOS-based routing, see RFC 1349 and RFC 1583.
Ext	External. This column indicates if external advertisements will be flooded into the area.
Age	Age of the LSA links in seconds. Links age out in one hour, unless they are refreshed with a new (larger) sequence number.

## Show OSPF Neighbor

Shows information about routers directly accessible through your network interfaces.

```
show ospf neighbor
```

### Example

Command> show ospf neighbor

Interface	Area	Neighbor	State	Pri	IP Address	Last Hello	MD5 ID
-----	-----	-----	-----	---	-----	-----	-----
ether0	192.168.1.0	192.168.1.1	2Way	0	192.168.1.1	9	N/A
ether1	10.0.0.0	10.0.0.1	Full/DR	2	10.0.0.1	3	2

### Explanation

Interface	The interface used to learn about the neighbor.
Area	The area to which the interface belongs.
Neighbor	The router ID of the neighboring router. This might not match its IP address.
State	<p>The OSPF state of the neighbor. The possible states are as follows:</p> <p>Down: Either the link to the neighbor is down, or hellos are not currently being received from the neighbor.</p> <p>Init: The connection with this neighbor has been reset, and there has been no hello from it that shows it has received a hello from this router.</p> <p>2Way: A hello has been received from the neighbor that shows it can see hellos from this router.</p> <p>Exstart: The router is beginning to form an adjacency with this neighbor. This state only occurs between a designated router (DR) or backup designated router (BDR) and the other routers on the network segment they service. Neighbors that are neither DR or BDR never go past the 2Way state with each other.</p>



State (continued)	Exchange: The router is exchanging current LSA information with the neighbor.					
	Loading: The router and the neighbor have finished exchanging information, and are now updating each other with the LSAs they need to share.					
	Full: The router and the neighbor are now up-to-date with each other, sharing fully identical LSA information.					
	Note: The state on Full can be: <table> <tr> <td>Full</td><td>This neighbor is not a DR or BDR.</td></tr> <tr> <td>Full/DR</td><td>This neighbor is the DR.</td></tr> <tr> <td>Full/BDR</td><td>This neighbor is the BDR.</td></tr> </table>	Full	This neighbor is not a DR or BDR.	Full/DR	This neighbor is the DR.	Full/BDR
Full	This neighbor is not a DR or BDR.					
Full/DR	This neighbor is the DR.					
Full/BDR	This neighbor is the BDR.					
	See the examples of using the "ifconfig" command on page 11-9.					
Pri	The stated priority of the neighbor.					
IP Address	The IP address of the neighbor. This might not match the router ID.					
Last Hello	The time in seconds since the router last saw a hello from the neighbor.					
MD5 ID	A neighbor may be using one of many MD5 "secrets." This field shows which ID of the corresponding MD5 "secret" is being used by the neighbor. See "set ospf area md5" on page 11-18.					

## Ifconfig

This command displays configuration values for all interfaces, and is described more fully on page 3-5. Examples of output are given here to illustrate how "ifconfig" shows OSPF state parameters for the interface, with the identity of the designated router (DR), backup designated router (BDR), and other (OTHER) routers on the network.

## Examples

In the following example this router is the DR:

```
Command> ifconfig
ether0: flags=40106<IP_UP,IPX_DOWN,BROADCAST,PRIVATE,OSPF>
inet 192.168.200.131 netmask fffffff0 broadcast 192.168.200.0
area 192.168.200.0 ospf-state DR mtu 1500
```

In the following example this router is the BDR:

```
Command> ifconfig
ether0: flags=40016<IP_UP,IPX_DOWN,BROADCAST,OSPF>
inet 192.168.200.130 netmask ffffffff broadcast 192.168.200.0
area 192.168.200.0 ospf-state BACKUP mtu 1500
```

In the following example this router is neither the DR nor the BDR:

```
Command> ifconfig
ether0: flags=40106<IP_UP,IPX_DOWN,BROADCAST,PRIVATE,OSPF>
inet 192.168.200.129 netmask ffffffff broadcast 192.168.200.0
area 192.168.200.0 ospf-state DROTHER mtu 1500
```

### *Save OSPF*

This command writes any changes in the OSPF configuration to the nonvolatile memory of the PortMaster.

```
save ospf
```

### *Usage*

“save all” can also be used.

### *Example*

```
Command> save ospf
New configurations successfully saved.
```

## Enable or Disable OSPF

This command enables or disables the use of OSPF on the PortMaster.



**Note** – You must issue the “save all” and “reboot” commands immediately after issuing the “set ospf enable” command, before you can continue with any other OSPF configuration.

set ospf enable | disable

**enable** This option must be used before OSPF can be configured or used on the PortMaster.

**disable** This option disables the use of OSPF on the PortMaster, and frees the system memory used by OSPF.  
This is the default.

### Usage

The “save all” and “reboot” commands must be issued after you use this command with either the “enable” or “disable” options.

### Example

Command> set ospf enable  
OSPF will be enabled after next reboot

### Priority

This command sets the OSPF priority to determine the designated and backup routers.

set ospf priority *Number*

**Number** Number from 0 to 255. Choosing 0 means that this router will refuse to take on the duties of a designated router at any time. 0 is the default.



## Usage

The priority must be set. If priorities tie, router ID is used as a tie breaker, with the lower number winning.

The higher priority determines which router will be the designated router. This calculation is performed on each interface separately. For example, on an IRX-211, the router may be the designated router on Ether0, but not on Ether1. The router with the second highest priority on a network segment is chosen as the backup designated router. The backup designated router takes over as designated router if the regular designated router is unable to perform its duties.

## Examples

```
Command> set ospf priority 1
OSPF priority changed from 5 to 1
```

## Add OSPF Area

This command adds an area to the area tables of the router. An area is a contiguous set of routers sharing network segments between them<sup>1</sup>. Routers may be in more than one area, in which case they are area border routers. All routers must have at least one interface in area 0.0.0.0, known as the backbone area.

```
add ospf area Area
```

*Area*

The area is specified in dotted quad or decimal notation.

## Usage

Choose 0.0.0.0 if you only have one OSPF area.

## Example

```
Command> add ospf area 0.0.0.0
New Area successfully added
```

## See Also

set ospf area - page 11-13

1. The use of virtual links to either create a noncontiguous area or allow an area border router to not be directly attached to the backbone is not currently supported.

## Delete OSPF Area

This command deletes an area from the area table of the router.

`delete ospf area Area`

*Area*                      The area is specified in dotted quad or decimal notation.

### Example

Command> delete ospf area 0.0.0.0  
Area successfully deleted

## Range

This command sets the ranges for an OSPF area and optionally, the type of route propagation. More than one range can be given to a single area.

`set ospf area Area range Ipaddress/NM [advertise | quiet | off]`

<i>Area</i>	The OSPF area address, specified in dotted quad or decimal notation.
<i>Ipaddress</i>	The prefix that all IP addresses within the range will share.
<i>NM</i>	The netmask that indicates the number of high-order bits in the <i>Ipaddress</i> that must match addresses to consider those addresses within the area. This is a number from 1 to 30, preceded by a slash (/)—for example, /24.
advertise	Routes to those networks will be summarized to other areas. This is the default.
quiet	Routes to those networks will not be summarized to other areas.
off	Those networks are removed from the area.



### **Usage**

When "advertise" is on for an area border router, a summary link is propagated for that range. If set to "quiet," the summary link is not propagated. Only four ranges are allowed per area.

### **Example**

```
Command> set ospf area 0.0.0.0 range 192.168.1.0/24 quiet
Area successfully updated
```

## **External Routes**

This command allows the propagation of external routes into the OSPF area.

```
set ospf area Area external on | off
```

<i>Area</i>	The OSPF area address, specified in dotted quad or decimal notation.
on	This is a transit area.
off	This is a stub area.

### **Usage**

This command lets you define an area as a transit or stub area. Typically, the backbone area (0.0.0.0) is always defined as a transit area. In contrast, a stub area does not attach to any area except the backbone, and has no exit other than to the backbone area. As a result, external routes are not propagated to stub areas which must be given a default route to reach external destinations. Use the "set ospf area stub-default-cost" command to enable an area border router to create and inject default routes to stub areas.

### **Example**

```
Command> set area 0.0.0.0 external off
Area successfully updated
```

### **See Also**

set ospf area stub-default-cost - page 11-15



## ***Stub Area Default Route***

This command enables a border router to create and inject the default route (0.0.0.0) into a stub area. When a cost is specified, the default route is advertised to the stub area.

**set ospf area *Area* stub-default-cost *Cost***

<i>Area</i>	The address of the OSPF area being configured, it is specified in dotted quad or decimal notation.
<i>Cost</i>	The cost given to the default stub route. An integer from 0 to 15. Setting <i>Cost</i> to 0 disables the command.

### ***Usage***

Stub areas of an autonomous system can be defined with the “set ospf area external off” command. External advertisements are not injected into these stub areas, and routing to external destinations is based on a default route for each stub area. This command enables area border routers to inject the required default route into a stub area, but no further.

### ***Example***

Command> set area 0.0.0.0 stub-default-cost 4  
Area successfully updated

### ***See Also***

set ospf area external - page 11-14

## Add Route

This command adds a static route to the IP Route Table on the PortMaster.

`add route Ipaddress/NM Ipaddress(gw) Metric`

<i>Ipaddress</i>	The destination address or network.
<i>NM</i>	The netmask that indicates the number of high-order bits in the <i>Ipaddress</i> that are matched against the destination. This is a number from 1 to 32, preceded by a slash (/)—for example, /24.
<i>Ipaddress(gw)</i>	Gateway IP address.
<i>Metric</i>	Hop count to the remote destination.

## Usage

The destination is the IP address of the host or network for which the PortMaster is routing. The gateway is the address of a router where packets should be sent for forwarding to the destination. The gateway should never be set to any address on the PortMaster itself.

## Example

```
Command> add route 192.168.1.0/24 172.16.1.1 3
New route entry successfully added
```

## See Also

show routes - page 15-3  
add route - page 15-5  
delete route - page 15-6  
set gateway - page 4-8

## ***Password***

This command sets the password for the OSPF area.

set ospf area *Area* password *String*

<i>Area</i>	The OSPF area address, specified in dotted quad or decimal notation.
<i>String</i>	Password; an ASCII string of 1 to 8 characters.

## ***Usage***

This command sets a password or key to use when you are communicating to other routers in the area. Not specifying a password indicates that no password is set for the area.

## ***Example***

Command> set area 0.0.0.0 password gwKGft5%  
Area successfully updated



## MD5 Authentication

This command sets the Message-Digest algorithm (MD5) secret for the OSPF area, as specified in RFC 1321.

*set ospf area Area md5 Number String*

<i>Area</i>	The OSPF area address, specified in dotted quad or decimal notation.
<i>Number</i>	A key ID number associated with the MD5 secret. An integer from 1 to 255.
<i>String</i>	MD5 secret; an ASCII string of 1 to 16 characters.

## Usage

All routers in the area must have the same key number that is associated with the MD5 secret.

When an MD5 key number and secret are changed, both the old and the new key numbers and secrets remain valid until a PortMaster "reboot" or a "reset ospf" command is issued. This feature facilitates updating of area router information.



**Caution** – Do not overwrite the current key number with the same number; doing so will cause the secret to be lost immediately.

## Example

Command> set ospf area 10.0.0.0 md5 6 kjtrewhut  
Area successfully updated

## Router ID

This command sets the OSPF router address or ID number.

**set ospf router-id *Ipaddress* | *Number***

*Ipaddress*

The OSPF router address, specified in dotted quad or decimal notation. If the router address is set to 0.0.0.0, it defaults to the router's Ethernet address.

*Number*

If the router ID is set to 0, it defaults to the router's Ethernet address.

### Usage

By default the Ether0 IP address is used, and Livingston strongly recommends that the default be used.



**Note** – Be careful when using this feature. When you set a new router ID, the links belonging to an old router ID will have to expire, and routing instability can result for one hour until the old links expire.

### Example

Command> set ospf router-id 0.0.0.0  
OSPF router-id changed from 2.2.2.3 to 0.0.0.0

### See Also

set ospf priority - page 11-11

## ***RIP Routing***

This command allows the flooding of RIP routes learned on this Ethernet interface into OSPF as Type 2 external routes.

set *Ether0* ospf accept-rip on | off

<i>Ether0</i>	Ethernet interface, ether0 or ether1.
on	Enables the flooding of RIP routes into OSPF.
off	Disables the flooding of RIP routes into OSPF. This is the default.

## ***Usage***

When routers run both RIP and OSPF on a network, the RIP routes learned from other routers on a network can be translated into OSPF Type 2 external routes. Use this command when you need to enable the flooding of the learned RIP routes into OSPF areas.

However, if the RIP routes learned from the Ethernet interface come from routers that are always running OSPF as well as RIP, leave this command set to the "off" default to avoid duplicating the route information.

## ***Example***

Command> set ether0 ospf accept-rip on  
Ether0 OSPF accept-rip changed from off to on



## Ethernet

This command enables or disables OSPF protocol on an Ethernet interface.

set *Ether0* ospf on | off

<i>Ether0</i>	Ethernet interface, ether0 or ether1.
on	OSPF is supported on the Ethernet interface.
off	OSPF is not supported on the Ethernet interface.

## Usage

The order of OSPF configuration is very important. First set priority (and router ID if desired), then set areas and ranges, and finally enable OSPF for the interfaces.

## Example

Command> set ether0 ospf on  
Ether0 ospf state changed from off to on.

## *Asynchronous or Synchronous Port*

This command enables or disables OSPF protocol on an asynchronous or synchronous network hardwired port.

set S0|W1 ospf on|off

S0	An asynchronous port.
W1	A synchronous port.
on	OSPF is supported on the port.
off	OSPF is not supported on the port.

### *Usage*

The order of OSPF configuration is very important. First set priority (and router ID if desired), then set areas and ranges, and finally enable OSPF for the interfaces.

### *Example*

Command> set w1 ospf on  
W1 ospf state changed from off to on.

## Location

This command enables or disables OSPF protocol for a Frame Relay subinterface location.

set location *Locname* ospf on | off

<i>Locname</i>	A Frame Relay location name that is in the location table.
on	OSPF is supported on a Frame Relay subinterface location.
off	OSPF is not supported on a Frame Relay subinterface location.

## Usage

This command is used only with a Frame Relay subinterface.

## Example

Command> set location hq ospf on  
Location hq ospf changed from off to on.



## Debug

This command sets debug flags used for troubleshooting. Debug information is displayed to the console.

`set debug ospf-hello | ospf-event | ospf-lsu | ospf-lsa | ospf-max on | off`

<code>ospf-hello</code>	Set "on" to show hello packets sent between neighbors.
<code>ospf-event</code>	Set "on" to show changes in state between neighbors.
<code>ospf-lsu</code>	Set "on" to show link state update packets sent or received.
<code>ospf-lsa</code>	Set "on" to show link state acknowledgment packets sent or received.
<code>ospf-max</code>	Set "on" to show all the above OSPF debug information.

## Usage

The "debug" command is useful for troubleshooting the OSPF protocol. Output is sent to the system console set by the "set console" command. After completing the debugging process, disable the debug commands by using the correct "set debug off" command.

This chapter describes how to use the Command Line Interface to configure the User Table. Detailed command definitions follow a command summary table.

The User Table enables the PortMaster to authenticate and provide operational parameters on a user-by-user basis.

You can use the Command Line Interface to create, edit, and delete four kinds of users:

- *Normal network user* establishes an immediate active PPP or SLIP connection to the network.
- *Dialback network user* is immediately disconnected by the PortMaster, which then dials back to the user at a predefined location. For more information about locations, refer to Chapter 13, "Location Table and DLCI Table."
- *Normal login user* begins an active shell session to a host on the network.
- *Dialback login user* is immediately disconnected by the PortMaster, which then dials back to the user at a predefined telephone number.



**Note** – Whenever possible, especially if you have 100 or more users, you should use RADIUS for user authentication rather than the User Table. To use RADIUS see Chapter 4, "Global Configuration," and the *RADIUS Administrator's Guide*.

## Displaying User Table Data

To display information about your configuration, use the following User Table commands:

- `show table user` - see page 12-4
- `show user username` - see page 12-5

## Configuring the User Table

To configure the User Table:

1. At the command line, enter your User Table configuration information as in this example:

```
Command> add user karla password weraZqouch  
Command> set user karla dialback 5551212  
Command> add netuser hideo  
Command> set user hideo routing on
```

As you press [Enter] following each command, the PortMaster responds by echoing the configuration change you have made. For example:

```
Command> add netuser kwasi password 1mno+vwab  
New User successfully added
```

For a description of each command, refer to "Description of User Table Commands," on page 12-4.

2. When you finish configuring the User Table, enter the "save user" command to write your configuration changes to the nonvolatile memory of the PortMaster, as follows:

```
Command> save user
```

"save all" can also be used.



## Summary of User Table Commands

The User Table commands in Table 12-1 configure the User Table used to authenticate dial-in users. RADIUS can also be used to authenticate dial-in users; the User Table is always consulted first.

Table 12-1 User Table Configuration

Command Syntax
show table user
show user <i>Username</i>
save user
add netuser <i>Username</i> [password <i>Password</i> ]
add user <i>Username</i> [password <i>Password</i> ]
delete user <i>Username</i>
set user <i>Username</i> password <i>Password</i>
set user <i>Username</i> dialback <i>Locname</i>   <i>String</i>   none
set user <i>Username</i> host default   prompt   <i>Ipaddress</i>
set user <i>Username</i> service netdata   portmaster   rlogin   telnet [ <i>Tport</i> ]
set user <i>Username</i> protocol slip   ppp
set user <i>Username</i> destination assigned   negotiated   <i>Ipaddress</i>
set user <i>Username</i> local-ip-address <i>Ipaddress</i>
set user <i>Username</i> netmask <i>Ipmask</i>
set user <i>Username</i> ipxnet <i>Ipxnetwork</i>
set user <i>Username</i> routing on   off   broadcast   listen
set user <i>Username</i> compression on   off
set user <i>Username</i> ifilter <i>Filtername</i>
set user <i>Username</i> ofilter <i>Filtername</i>
set user <i>Username</i> mtu <i>MTU</i>
set user <i>Username</i> map <i>Hex</i>

Table 12-1 User Table Configuration (Continued)

Command Syntax
set user <i>Username</i> maxports <i>Number</i>
set user <i>Username</i> idle <i>Number</i> [minutes   seconds]
set user <i>Username</i> session-limit <i>Minutes</i>

## Description of User Table Commands

These commands configure the User Table of the PortMaster.

### Show Table

This command shows the current users in the User Table.

```
show table user
```

### Example

```
Command> show table user
```

Name	Type	Address/Host	Netmask/ Service	RIP
bill	Netuser	255.255.255.255	00000000	No
hideo	Dialback User	default	Telnet	
marie	Netuser	192.168.1.74	00000000	No
kwasi	Login User	default	PortMaster	
jill	Netuser	255.255.255.254	00000000	No

### See Also

show user - page 12-5

## **Show User**

This command shows the configuration of the specified user.

**show user** *Username*

*Username*                      A user name of 1-8 characters.

### **Example**

Command> show user jack

Username: jack

Host: default

Type: Login User

Login Service: portmaster

### **See Also**

show table user - page 12-4

## **Save User**

This command writes any changes in the User Table to the nonvolatile memory of the PortMaster.

**save user**

### **Usage**

"save all" can also be used.

### **Example**

Command> save user

User table successfully saved

New configurations successfully saved.



## Add Netuser

This command adds an entry to the User Table for a network user.

add netuser *Username* [password *Password*]

*Username*                      A network user name of 1-8 characters.

*Password*                      A network user password of 0-16 characters.

## Usage

A network user must be added to the User Table before other netuser parameters can be configured. You cannot add network users with blank network user names.

## Example

Command> add netuser jaime password 1mno+vwab  
New User successfully added



**Note** – Set commands can use “user” and “netuser” interchangeably, except that you cannot say “set netuser” for a login user. The “add” command requires “add netuser” for network users and “add user” for login users.

## See Also

delete user - page 12-7

## Add User

This command adds an entry to the User Table for a login user. Optionally, the user password may be added at the same time.

add user *Username* [password *Password*]

*Username*                      A login user name of 1-8 characters.

*Password*                      A login user password of 0-16 characters.

## ***Usage***

A user must be added to the User Table before other user parameters can be configured.

## ***Example***

Command> add user sam password yzgixcel  
New User successfully added

## ***See Also***

delete user - page 12-7

## ***Delete User***

This command deletes a user or network user, password, and associated information from the User Table.

delete user *Username*

*Username*

User name of existing login user or network user

## ***Example***

Command> delete user sam  
Password successfully deleted

## ***See Also***

show table user - page 12-4

## Password

This command sets the password for a login user or network user.

```
set user Username password Password
```

*Username*                      User name of existing login user or network user.

*Password*                     A user password of 0-16 characters.

## Usage

As shown in the example, the password is not displayed by any of the responses to a "set" or "show" command.

## Example

```
Command> set user marie password zasq2-ab
```

```
Username: marie
```

```
Address: Negotiated
```

```
Protocol: SLIP
```

```
MTU: 1006
```

```
Type: Dial-in Network User
```

```
Netmask: 0.0.0.0
```

```
Options: Quiet, Listen
```

## Dialback

This command sets the dialback telephone number for a dialback login user, or the location for a dialback network user.

```
set user Username dialback Locname | String | none
```

*Username*                      User name.

*Locname*                       Network user location name.

*String*                        Login user dialback telephone number.

*none*                          Disables dialback for this user, who becomes a normal login or network user.



## Usage

For a dialback login user, this is the string of characters that would follow the Hayes-compatible "ATDT" command to dial back to the user. If a telephone number is entered, the user is changed to a dialback user.

For a dialback network user, this is the name of the Location Table entry to establish a network connection back to the user.

## Examples

Command> set user sam dialback 5551212

Username: sam	Type: Login User
Host: default	Login Service: portmaster
Dialback No: 5551212	

Command> set user mario dialback office

Username: mario	Type: Dialback Network User
Location: office	

## See Also

set S0 dialback\_delay - page 6-25

## Host

This command indicates the login host for the login user.

set user *Username* host default | prompt | *Ipaddress*

<i>Username</i>	Login user name.
default	Connect user to the default host for the serial port.
prompt	Allows the user to select a host (by IP address or name) to begin a login session.
<i>Ipaddress</i>	Connects the user to the specified IP address or host name.

## Usage

The login host parameter defines the host to which the user is connected.

## Example

Command> set user jack host 192.168.1.2

Username: jack

Type: Login User

Host: 192.168.1.2

Login Service: portmaster

## See Also

set host - page 4-5

set S0 host - page 6-29

## Service

This command selects the login service for the login user.

set user *Username* service netdata | portmaster | rlogin | telnet [*Tport*]

<i>Username</i>	Name of login user.
netdata	Use netdata connection (TCP clear channel).
portmaster	Use PortMaster login service to connect to "in.pmd" on login host. This is the default.
rlogin	Use the rlogin protocol to connect to login host.
telnet	Use Telnet to connect to login host.
<i>Tport</i>	The designated TCP port on the host.

## Example

Command> set user sam service rlogin

Username: sam

Type: Login User

Host: default

Login Service: rlogin (513)

## See Also

set S0 service\_login - page 6-27

## Protocol

This command sets the transport protocol for a network user.

```
set user Username protocol slip | ppp
```

<i>Username</i>	Name of network user.
slip	SLIP protocol. This is the default.
PPP	PPP protocol.

## Usage

If a nonzero IP address is set for a network user using PPP, IP is routed. If a nonzero IPX network is set for the user, IPX is routed.

## Example

```
Command> set user mario protocol ppp
```

Username: mario	Type: Dial-in Network User
Address: Negotiated	Netmask: 0.0.0.0
Protocol: PPP	Options: Quiet, Listen
MTU: 1500	Async Map: 00000000



## Destination

This command sets the IP address of the network user.

set user *Username* destination assigned | negotiated | *IPaddress*

<i>Username</i>	Name of network user.
assigned	The PortMaster assigns a temporary IP address for this user from the assigned pool.
negotiated	This option is valid only for PPP sessions. The PortMaster attempts to learn the IP address of the remote host by IP Control Protocol (IPCP) negotiation.
<i>IPaddress</i>	Use the indicated IP address. If 0.0.0.0, do not use IP for this user.

## Usage

Address 255.255.255.255 is the same as "negotiated." Address 255.255.255.254 is the same as "assigned."

## Example

Command> set user jaime destination assigned

Username: jaime

Address: Assigned

Protocol: PPP

MTU: 1500

Type: Dial-in Network User

Netmask: 0.0.0.0

Options: Quiet, Listen

## See Also

set assigned\_address - page 4-10

## Local IP Address

The PortMaster uses the IP address for the selected user as the IP address on the PortMaster serial interface.

```
set user Username local-ip-address Ipaddress
```

*Username*                      Name of network user

*Ipaddress*                    An IP address or host name

## Usage

This function is not available in RADIUS. In typical usage it is not needed, and should be avoided.

## Example

```
Command> set user rani local-ip-address 192.168.96.6
```

Username: rani

Type: Dial-in Network User

Address: Negotiated

Netmask: 0.0.0.0

Lcl Address: 192.168.96.6

Protocol: PPP

Options: Quiet, Compression

MTU: 1500

Async Map: 00000000

## See Also

set user destination - page 12-12

set reported\_ip - page 4-11

## Netmask

This command defines the netmask of the user's system on the remote end of the connection.

```
set user Username netmask Ipmask
```

*Username*                      Name of network user.

*Ipmask*                        IP netmask. The default is 0.0.0.0.

## Usage

Enter the netmask number in dotted quad notation. For more information, see the section on netmasks in the *Configuration Guide for PortMaster Products*.

## Example

```
Command> set user jaimie netmask 255.255.255.0
```

Username: jaimie

Type: Dial-in Network User

Address: Assigned

Netmask: 255.255.255.0

Protocol: SLIP

Options: Quiet, Listen

MTU: 1006

## IPX Network

This command sets the IPX network number for the user's network connection.

```
set user Username ipxnet Ipxnetwork
```

*Username*                      Name of network user.

*Ipxnetwork*                    IPX network to be used for serial link, expressed in hexadecimal format, up to 8 digits long.



## Usage

The PPP protocol must be used with IPX. If you set the IPX network number to FFFFFFFE, the PortMaster assigns an IPX network for the user by using an address from the assigned pool as an IPX network number.

## Example

Command> set user hideo ipxnet 0f012345

IPX network set to F012345

Username: hideo

Type: Dial-in Network User

Address: Assigned

Netmask: 255.255.255.0

IPX Network: 0F012345

Protocol: PPP

Options: Quiet, Listen

MTU: 1500

## See Also

set assigned\_address - page 4-10

set ipx on - page 4-13

## Routing

This command sets the routing for a network user.

set user *Username* routing on | off | broadcast | listen

<i>Username</i>	Name of network user.
on	The PortMaster sends and listens for route information to the interface established when this user logs in. This is the default.
off	The PortMaster neither sends nor listens for route information on the interface established when this user logs in.
broadcast	The PortMaster sends route information to the interface established when this user logs in.
listen	The PortMaster listens for route information from the interface established when this user logs in.

## Usage

The PortMaster automatically sends and listens for RIP packets to and from the remote host, if routing is turned on.

## Example

Command> set user joe routing off

Username: joe

Address: Negotiated

Protocol: SLIP

MTU: 1006

Type: Dial-in Network User

Netmask: 0.0.0.0

Options: Quiet

## See Also

set default - page 4-9

## Compression

This command sets Van Jacobson TCP/IP Header Compression for a network user.

set user *Username* compression on | off

<i>Username</i>	Network user name
on	Enables header compression
off	Disables header compression

## Usage

When compression is enabled, the PortMaster uses Van Jacobson TCP/IP header compression to improve the performance of interactive TCP sessions. For SLIP connections, both sides need to be configured identically. For PPP connections, the PortMaster supports both unidirectional and bidirectional compression.

## Example

Command> set user joe compression on

Username: joe

Address: Negotiated

Protocol: SLIP

MTU: 1006

Type: Dial-in Network User

Netmask: 0.0.0.0

Options: Quiet, Compression

## Input Filter

This command sets the input packet filter for packets entering the PortMaster on the interface established by the network user.

set user *Username* ifilter *Filtername*

*Username*                      Name of network user.

*Filtername*                    Input filter name that is in the Filter Table.

## Usage

When an input packet filter is specified, all packets received from the serial interface are evaluated against the rule set for this filter, which has been defined and is in the Filter Table. Only packets that are permitted by this filter are allowed to enter the PortMaster.

An access control filter, using a valid filter name from the Filter Table, can be set for login users to restrict which hosts they can log into, as follows:

- The user logs in and specifies a host.
- The host address is compared against the access filter.
- If the address is permitted by the filter, the connection is established; otherwise the connection is denied.

You remove the filter by entering the command without a filter name.



## Example

Command> set user joe ifilter student.in

Username: joe

Address: Negotiated

Protocol: SLIP

MTU: 1006

Packet Filters: student.in/

Type: Dial-in Network User

Netmask: 0.0.0.0

Options: Quiet, Compression

## See Also

set user ofilter - page 12-18

set user host prompt - page 12-9

add filter - page 14-5

## Output Filter

This command sets the output packet filter for packets leaving the PortMaster on the interface established by this dial-in network user.

set user *Username* ofilter *Filtername*

*Username*                      Name of network user.

*Filtername*                      Output filter name that is in the Filter Table.

## Usage

When an output packet filter is specified, packets being sent to the serial interface are evaluated against the rule set for this filter, which has been defined and is in the Filter Table. Only packets that are permitted by this filter are allowed to leave the PortMaster.

You remove the filter by entering the command without a filter name.

### Example

Command> set user joe ofilter student.out

Username: joe

Address: Negotiated

Protocol: SLIP

MTU: 1006

Packet Filters: /student.out

Type: Dial-in Network User

Netmask: 0.0.0.0

Options: Quiet, Compression

### See Also

set user ifilter - page 12-17

add filter - page 14-5

## MTU

This command sets the maximum transmission unit (MTU) for the network user.

set user *Username* mtu *MTU*

*Username*

Name of network user

*MTU*

MTU value from 100 to 1520 bytes

### Usage

The MTU defines the largest frame or packet that can be sent, without fragmentation. A packet that exceeds this value is automatically fragmented if IP, or discarded if IPX. PPP connections have a maximum MTU of 1520 bytes, and SLIP connections have a maximum of 1006 bytes.

### Example

Command> set user joe mtu 1500

Username: joe

Address: Negotiated

Protocol: PPP

MTU: 1500

Packet Filters: student.in/student.out

Type: Dial-in Network User

Netmask: 0.0.0.0

Options: Quiet, Compression

Async Map: 00000000

## See Also

set user protocol - page 12-11

## Asynchronous Character Map

This command sets the PPP asynchronous map to escape nonprinting ASCII characters found in the data stream.

set user *Username* map *Hex*

*Username*                      Name of network user.

*Hex*                              A 32-bit hexadecimal number. The default is 00000000.

## Usage

The PPP protocol supports the replacement of nonprinting ASCII data in the PPP stream. These characters are not sent through the line, but instead are replaced by a special set of characters that the remote site interprets as the original characters. The PPP asynchronous map is a bit map of characters that should be replaced. The lowest-order bit corresponds to the first ASCII character NUL and so on. Most environments should use the default.

## Example

Command> set user joe map 00000001

Username: joe

Address: Negotiated

Protocol: PPP

MTU: 1500

Packet Filters: student.in/student.out

Type: Dial-in Network User

Netmask: 0.0.0.0

Options: Quiet, Compression

Async Map: 00000001



## Maxports

This command, if set, limits the number of network dial-in ports the user can use on the PortMaster for Multilink V.120, Multilink PPP, and asynchronous multiline load-balancing.

set user *Username* maxports *Number*

<i>Username</i>	Name of user
<i>Number</i>	A number between 0 and 60

## Usage

If the number of dial-in ports is left unconfigured, port limits are not imposed and Livingston's multiline load-balancing, Multilink V.120, and Multilink PPP sessions are allowed. You can also set the dial-in port limit using the RADIUS Port-Limit attribute.

## Example

```
Command> set user joe maxports 2
Username: joe                               Type: Dial-in Network User
Address: Negotiated                         Netmask: 0.0.0.0
Protocol: PPP                               Options: Quiet, Compression
MTU: 1500                                   Async Map: 00000000
Port Limit: 2                               Idle Timeout: 0
```

## See Also

set location maxports - page 13-25

## Idle Timeout

This command sets the length of time the line can be idle—in both directions—before the PortMaster disconnects the user.

set user *Username* idle *Number* [minutes | seconds]

<i>Number</i>	Timeout value from 0 to 240. The default value is 0.
minutes	Sets the idle time in minutes. This is the default.
seconds	Sets the idle time in seconds.

## Usage

You can set user idle timeout in the User Table using this command, or you can use the RADIUS Idle-Timeout attribute. The RADIUS attribute is specified in seconds, but when greater than 240 seconds it is rounded up to minutes by the PortMaster.

## Examples

Command> set user joe idle 30

Username: joe  
Address: Negotiated  
Protocol: PPP  
MTU: 1500  
Port Limit: 2

Type: Dial-in Network User  
Netmask: 0.0.0.0  
Options: Quiet, Compression  
Async Map: 00000000  
Idle Timeout: 30

## See Also

set user session-limit - page 12-23

## Session Limit

This command sets the maximum length of a session permitted before the PortMaster disconnects the user.

set user *Username* session-limit *Minutes*

*Username*                      Name of user.

*Minutes*                      Session limit in minutes, any value from 0 to 240.  
The default is 0.

## Usage

You can set the user session limit in the User Table using this command, or you can use the RADIUS Session-Timeout attribute. The RADIUS attribute is specified in seconds, but is rounded up to minutes by the PortMaster.

## Examples

Command> set user joe session-limit 60

Username: joe

Type: Dial-in Network User

Address: Negotiated

Netmask: 0.0.0.0

Protocol: PPP

Options: Quiet, Compression

MTU: 1500

Async Map: 00000000

Port Limit: 2

Idle Timeout: 30

Session Lim: 60

## See Also

set user idle - page 12-22





This chapter describes how to use the Command Line Interface to configure the Location Table used for dial-out network connections. Detailed command definitions follow a command summary table. A summary table and details for the data link connection identifier (DLCI) Table, used for Frame Relay subinterfaces, are also described.

## *Displaying the Location Table*

Use the following commands to display information about the Location Table:

- show table location - see page 13-4
- show location Locname - see page 13-4
- dial Locname -x - see page 3-7
- ifconfig - see page 3-5

## *Configuring the Location Table*

To configure the Location Table:

1. At the command line, enter your Location Table information as in this example:

```
Command> add location denver  
Command> set location denver manual  
Command> set location denver protocol ppp
```

As you press [Enter] following each command, the PortMaster responds by echoing the change you have made, as in the following example:

```
Command> set location denver routing on  
denver routing changed from off to on (broadcast,listen)
```

The maximum number of network dial-out ports should be the last setting you make for the Location Table. For information on setting this value see page 13-25. When the maximum number of network dial-out ports is set greater than 0, the location is available for use.

For a description of each command, refer to "Description of Location Table Commands," on page 13-4.

2. When you finish configuring the Location Table, enter the Save command to write your configuration changes to the nonvolatile memory of the PortMaster, as follows:

Command> save location

"save all" can also be used.

## Summary of Location Table Commands

The Location Table commands in Table 13-1 are used to configure the Location Table, used for network dial-out.

Table 13-1 Location Table Commands

Command Syntax
show table location
show location <i>Locname</i>
save location
add location <i>Locname</i>
delete location <i>Locname</i>
set location <i>Locname</i> continuous   manual   on_demand
set location <i>Locname</i> protocol slip   ppp   frame
set location <i>Locname</i> destination <i>Ipaddress</i>
set location <i>Locname</i> netmask <i>Ipmask</i>
set location <i>Locname</i> ipxnet <i>Ipxnetwork</i>
set location <i>Locname</i> routing on   off   broadcast   listen



Table 13-1 Location Table Commands (Continued)

Command Syntax
set location <i>Locname</i> group <i>Group</i>
set location <i>Locname</i> map <i>Hex</i>
set location <i>Locname</i> compression on   off
set location <i>Locname</i> mtu <i>MTU</i>
set location <i>Locname</i> script   v25bis <i>RuleNumber String1 String2</i>
set location <i>Locname</i> telephone <i>String</i>
set location <i>Locname</i> username <i>Username</i>
set location <i>Locname</i> password <i>Password</i>
set location <i>Locname</i> voice on   off
set location <i>Locname</i> chap on   off
set location <i>Locname</i> high_water <i>Number</i>
set location <i>Locname</i> idletime <i>Number</i> [minutes   seconds]
set location <i>Locname</i> ifilter <i>Filtername</i>
set location <i>Locname</i> ofilter <i>Filtername</i>
set location <i>Locname</i> multilink on   off
set location <i>Locname</i> maxports <i>Number</i>
set location <i>Locname</i> ospf on   off

- see page 11-23

## Description of Location Table Commands

These commands configure the Location Table of the PortMaster.

### Show Table Location

Network dial-out destinations are configured using the Location Table. This command shows the current entries in the Location Table.

```
show table location
```

#### Example

```
Command> show table location
```

Location	Destination	Netmask	Group	Maxconn	Type
hq	172.16.1.1	255.255.255.0	1	4	On Demand
sf	192.168.1.21	255.255.255.0	99	1	Manual
sub1	192.168.3.1	255.255.255.0	2	0	Manual
bsp	172.16.1.21	255.255.255.0	99	1	Manual

#### See Also

show location - page 13-4

### Show Location

This command displays the configuration of the specified location.

```
show location Locname
```

<i>Locname</i>	Name of a remote location, up to 12 characters long
----------------	---

### **Example**

Command> show location hq

Location: hq	Type: Manual
Destination: Negotiated	Netmask: 255.255.255.0
Protocol: PPP	Options: Quiet, Compression
Group: 0	Max Ports: 0
Idle Timeout: 0 minutes	High Mark: 0 bytes
Mtu: 1500	Async Map: 00000000

### **See Also**

show table location - page 13-4

### **Save Location**

This command writes any changes to the Location Table to the nonvolatile memory of the PortMaster.

save location

### **Usage**

"save all" can also be used.

### **Example**

Command> save location  
Location table successfully saved  
New configurations successfully saved.

### **Add Location**

This command adds a location to the Location Table.

add location *Locname*

<i>Locname</i>	Name of a remote location, up to 12 characters long
----------------	---



### **Usage**

The location name is usually an identifier that represents an entire location, for example, a city or a company name at that location. It is not usually the name of a single system.

### **Example**

```
Command> add location hq
Location hq successfully added
```

### **See Also**

show table location - page 13-4  
save location - page 13-5  
delete location - page 13-6

## **Delete Location**

This command deletes a location from the Location Table.

```
delete location Locname
```

<i>Locname</i>	A previously created location name that is in the Location Table.
----------------	---

### **Example**

```
Command> delete location hq
Location hq successfully deleted
```

### **See Also**

show table location - page 13-4  
save location - page 13-5  
add location - page 13-5

## Set Location

This command modifies configuration parameters for the specified location.

```
set location Locname continuous | manual | on_demand
```

<i>Locname</i>	A location name that is in the Location Table.
continuous	The PortMaster dials out to the location at boot time, and redials after a delay of 30 seconds if the connection drops.
manual	The PortMaster dials to the remote location when the administrator uses the "dial" command or pmdial UNIX utility. This keyword is also used for network dialback users. This is the default.
on_demand	The PortMaster dials to the remote location when packets are queued for that location.

## Usage

continuous	If the telephone connection is lost, the PortMaster redials to that location. The redial mechanism in continuous mode is based on a back-off algorithm that begins at 30 seconds and continues forever.
manual	The request for connection can use the "dial" command, or it can be invoked from the pmdial utility installed on a UNIX host on the network. You can schedule connections by using the UNIX cron scheduler to call pmdial.
on_demand	The PortMaster creates a network interface and the appropriate routing information to notify attached networks of the connectivity to the remote site. The PortMaster can perform these tasks whether or not an actual physical connection exists to that site at the time.

When changing a location from manual to on-demand, make sure to close the dial-out connection by resetting the serial port before updating the Location Table.



### Example

```
Command> set location hq on_demand  
hq changed to On-Demand Dial
```

### See Also

set location idletime - page 13-21  
reset dialer - page 3-19

## Protocol

This command sets the protocol for encapsulating packets, for the specified location.

```
set location Locname protocol slip | ppp | frame
```

<i>Locname</i>	A location name that is in the Location Table.
slip	SLIP protocol.
PPP	PPP protocol.
frame	Frame Relay subinterface.

### Usage

PPP can be used with either or both IP and IPX packet routing.

### Example

```
Command> set location hq protocol ppp  
hq protocol changed to ppp
```

### See Also

add dlci - page 13-27  
set location mtu - page 13-14



## Destination

This command sets the IP address expected for the system at the remote end of the dial-out connection.

set location *Locname* destination *Ipaddress*

*Locname*                      A location name that is in the Location Table.

*Ipaddress*                    IP address or host name.

## Usage

For SLIP connections, the IP address or a valid host name of the system at the remote end of the dial-up connection should be entered. For PPP connections, the destination can be specified or negotiated. Assigned addresses are not supported for dial-out locations. To negotiate the address, use 255.255.255.255.

## Example

Command> set location hq destination 192.168.1.1  
hq destination changed from 0.0.0.0 to 192.168.1.1

## Netmask

This command sets the IP netmask expected for the host or network at the remote end of the dial-out connection.

set location *Locname* netmask *Ipmask*

*Locname*                      A location name that is in the Location Table.

*Ipmask*                        IP netmask. The default is 0.0.0.0.

## Usage

Enter the netmask number in dotted quad notation. For more information, see the section on netmasks in the *Configuration Guide for PortMaster Products*.

### **Example**

Command> set location hq netmask 255.255.255.0  
hq netmask changed from 0.0.0.0 to 255.255.255.0

## **IPX Network**

This command sets the IPX network number for the point-to-point connection.

set location *Locname* ipxnet *Ipxnetwork*

<i>Locname</i>	A location name that is in the Location Table.
<i>IPXnetwork</i>	IPX network number in hexadecimal, up to 8 digits.

### **Usage**

Specify this number only if you are routing IPX across the link. The number is only used for the serial link itself, and must be different from the IPX network numbers used for Ethernets at either end.

### **Example**

Command> set location home ipxnet 0f012345  
IPX network set to F012345

### **See Also**

set ipx on - page 4-13



## Routing

This command sets routing for the selected location.

set location *Locname* routing on | off | broadcast | listen

<i>Locname</i>	A location name that is in the Location Table.
on	The PortMaster sends and listens for route information from this network interface when it is established.
off	The PortMaster neither sends nor listens for route information from this network interface when it is established. This is the default.
broadcast	The PortMaster sends route information to this network interface when it is established.
listen	The PortMaster listens for route information from this network interface when it is established.

## Usage

Locations can have routing associated with them—for example, a dial-on-demand connection where the remote router is defined as a location on the local PortMaster. If routing is not set to “off” in an on-demand location, the PortMaster dials out to the location at boot time to perform routing, and hangs up when the idle timer expires. RIP packets do not affect the idle timer.

## Example

```
Command> set location hq routing on  
hq routing changed from off to on (broadcast,listen)
```



## Group

This command defines which network dial-out ports can be used for a specified location.

set location *Locname* group *Group*

*Locname*                      A location name that is in the Location Table.

*Group*                         Dial group from 0 to 99. The default is 0.

## Usage

Each location has a dial group number. Ports configured with this dial group number are available for dial-out to this location. This command can be used to reserve ports for dial out to specific locations, or to differentiate among different types of modems that are compatible with the remote location.

## Example

```
Command> set location hq group 1
hq group number changed from 0 to 1
```

## See Also

set S0 group - page 6-20

set W1 group - page 7-14

## Asynchronous Character Map

This command sets the PPP asynchronous map.

set location *Locname* map *Hex*

*Locname*                      A location name that is in the Location Table.

*Hex*                            A 32-bit hexadecimal number.

## Usage

The PPP protocol supports the replacement of nonprinting ASCII data in the PPP stream. These characters are not sent through the line, but instead are replaced by a special set of characters that the remote site interprets as the original characters. The PPP asynchronous map is a bit map of characters that should be replaced. The lowest-order bit corresponds to the first ASCII character NUL and so on. Most environments should set the asynchronous map to zero to achieve maximum throughput.

## Example

```
Command> set location hq map 0
hq async character map changed to 0x00000000
```

## Compression

This command sets the use of Van Jacobson TCP/IP header compression for the location, improving interactive session performance on slow lines.

```
set location Locname compression on | off
```

<i>Locname</i>	A location name that is in the Location Table.
on	Enable compression. This is the default.
off	Disable compression.

## Usage

Do not use header compression with multiline load-balancing or fast synchronous lines. For SLIP connections, both sides need to be configured identically. For PPP connections, the PortMaster supports both unidirectional and bidirectional compression.

## Example

```
Command> set location hq compression on
hq header compression changed from off to on
```



## MTU

This command sets the maximum transmission unit (MTU) for the location.

set location *Locname* mtu *MTU*

*Locname*                      A location name that is in the Location Table.

*MTU*                          MTU value, from 100 to 1520 bytes.

## Usage

The MTU defines the largest frame or packet that can be sent through this port, without fragmentation. A packet that exceeds this value is automatically fragmented if IP, or discarded if IPX. PPP connections have a maximum MTU of 1520 bytes, and SLIP connections have a maximum of 1006 bytes.

## Example

Command> set location denver mtu 1006  
denver mtu changed from 1500 to 1006

## See Also

set location protocol - page 13-8

## Script

This command sets up a dial script for dialing to a remote location.

set location *Locname* script | v25bis *RuleNumber String1 String2*

## Usage

*Locname*                      A location name that is in the Location Table.

script                        Set up dial script for dial-out on an asynchronous port.

v25bis                        Set up dial script for synchronous V.25bis protocol dial-out, for switched 56K or ISDN.



<i>RuleNumber</i>	Rule number, from 1 up. Use rule number 99 to delete the script.
<i>String1</i>	A send string of up to 30 characters, in quotation marks.
<i>String2</i>	An expect string of up to 30 characters, in quotation marks.

Each send string is sent from the PortMaster to the modem or remote host. When the expect string is matched against the input from the remote end, the next line in the send string is sent, and so on. When the last line in the script is finished, the PortMaster activates the data link protocol specified for this location. Therefore, the last entry in the Dial Command Script should be an expect string that indicates that the remote location is ready to begin receiving network packets.



**Note** – Alternatively, you can set up automatic Location Table scripting. This method is much simpler to administer, and is preferred for setting up Location Table scripting. See the commands “set location telephone,” “set location username,” and “set location password”—starting on page 13-16—for information.

Any printable ASCII character can be placed in the send or expect strings. In addition, the following special characters are available:

<code>\r</code>	ASCII carriage return. Send strings usually end with the “\r” character. Do not use “\r” in the send string for the V.25bis protocol.
<code>\0XX</code>	Replaced by the octal digit in the XX.
<code>\\</code>	Replaced by a single backslash.

When you are connecting to a remote PortMaster, the final expect string to verify should be “SL/IP” for SLIP connections and “PPP” or “~” (a tilde is always the first character of a PPP frame) for PPP connections. For other manufacturer’s products, consult their manuals.

The dial script can also be used to implement outbound PAP authentication. If you specify a PAP username and password in the last line of the dial script, the PortMaster can be authenticated by the remote end using PAP. This capability is shown in the final example below.

## Examples

Command> set location hq script 1 "atdt18005551212\r" "CONNECT"  
New script entry successfully added.

Command> set location hq script 2 "\r" "ogin:"  
New script entry successfully added.

Command> set location hq script 3 "my\_login\r" "ssword:"  
New script entry successfully added.

Command> set location hq script 4 "my\_password\r" "PPP"  
New script entry successfully added.

Command> set location denver v.25bis 1 "CRN7005552227" "=DCD="

New script entry successfully added.

Command> set location denver v.25bis 2 "=PAP=my-login/my-password"  
New script entry successfully added.

## See Also

set location telephone - page 13-16  
set location username - page 13-17  
set location password - page 13-18

## Telephone Number

Use the following command to set up a telephone number for automatic Location Table scripting for dialing to a remote location.

set location *Locname* telephone *String*

*Locname*                      A location name that is in the Location Table.

*String*                      The telephone number to dial. Specify multiple numbers by separating them with ampersands (&).  
The maximum string length is 64 characters.



## Usage

Location Table scripting, which uses this command together with the “set location username” and “set location password” commands, provides a simple alternative to setting up a V.25bis or chat dial script.

This is the preferred way to set up Location Table scripting when dialing to a remote location.

## Examples

Command> set location denver telephone 13035551212&13035551313  
New telephone successfully set for location denver

## See Also

set location script - page 13-14

set location username - page 13-17

set location password - page 13-18

## User Name

Use the following command to set up a PAP username for automatic Location Table scripting for dialing to a remote location.

set location *Locname* username *Username*

*Locname*                      A location name that is in the Location Table.

*Username*                    The PAP username to use when logging in to the remote location. The maximum name length is 64 characters.

## Usage

Location Table scripting, which uses this command together with the “set location telephone” and “set location password” commands, provides a simple alternative to setting up a V.25bis or chat dial script.

This is the preferred way to set up Location Table scripting when dialing to a remote location.



### **Example**

Command> set location denver username sanjose  
New username successfully set for location denver

### **See Also**

set location script - page 13-14  
set location telephone - page 13-16  
set location password - page 13-18

## **Password**

Use the following command to set up a password for automatic Location Table scripting for dialing to a remote location.

set location *Locname* password *Password*

*Locname*

A location name that is in the Location Table.

*Password*

The PAP password associated with the username. Alternatively, this password can be used with CHAP if CHAP authentication is set "on" for the location; see page 13-20. The maximum password length is 64 characters.

### **Usage**

Location Table scripting, which uses this command together with the "set location telephone" and "set location username" commands, provides a simple alternative to setting up a V.25bis or chat dial script.

This is the preferred way to set up Location Table scripting when dialing to a remote location.

### **Example**

Command> set location denver password excalcolaur  
New password successfully set for location denver

### ***See Also***

set location script - page 13-14  
set location telephone - page 13-16  
set location username - page 13-17  
set location chap - page 13-20

### ***Voice***

This command, when set to "on," is used to force a data-over-voice call on an outbound ISDN connection.

set location *Locname* voice on | off

<i>Locname</i>	A location name that is in the Location Table.
on	Voice is required for an outbound data-over-voice ISDN connection.
off	Voice is not required for an outbound data-over-voice ISDN connection.

### ***Usage***

Data over voice is supported for inbound and outbound ISDN connections. The PortMaster automatically accepts inbound voice calls and treats them as data calls. This command can be used to force a data-over-voice call for an outbound ISDN connection.

### ***Example***

Command> set location denver voice on  
denver voice dial changed from off to on

### ***See Also***

add location - page 13-5  
show location - page 13-4



## CHAP

This command is used for configuring outbound CHAP authentication.

set location *Locname* chap on | off

<i>Locname</i>	A location name that is in the Location Table.
on	CHAP authentication is required for an outbound dial.
off	CHAP authentication not supported for an outbound dial. This is the default.

### Usage

The username and password entered in the Location Table are used as the "system identifier" and "MD5 secret" in the CHAP authentication. Use of this feature eliminates the need to use the "sysname" and User Table configurations for CHAP, unless the device being dialed also dials into the PortMaster.

### See Also

set chap - page 4-13  
set pap - page 4-12  
set location password - page 13-18

## High-Water Mark

This command sets the number of bytes of queued network traffic required to open an additional dial-out line to the remote location.

set location *Locname* high\_water *Number*

<i>Locname</i>	A location name that is in the Location Table.
<i>Number</i>	A number between 0 and 65535 may be entered. The default is 0.



## Usage

This value is only used when "maxports" is greater than 1 and network dial-out ports are available on the PortMaster. The PortMaster can quickly use all of the available ports for this location dial group if the "high-water" setting is too small.

Generally, interactive terminal traffic has no more than a few hundred bytes queued at any one time, but file transfers (for example, FTP) queue several thousand bytes. Consider size differences when deciding the number to use for "high\_water."

## Example

```
Command> set location hq high_water 500
hq high water level changed from 0 to 500
```

## See Also

set location group - page 13-12  
set location maxports - page 13-25

## Idle Timeout

This command sets the length of time the line can be idle—in both directions—before the PortMaster disconnects the connection.

```
set location Locname idletime Number [minutes | seconds]
```

<i>Locname</i>	A location name that is in the Location Table.
<i>Number</i>	Timeout value from 0 to 240. The default value is 0.
minutes	Sets the idle time in minutes. This is the default.
seconds	Sets the idle time in seconds.

## Usage

The idle timeout value is specified in minutes or seconds and can be any value from 0 to 240. It is for manual and on-demand locations.

If the idle timeout value is set to 0 or 1 minute, the idle timer is disabled.

If the value is set in seconds or minutes to 2 or higher, the port is reset after having no traffic for the designated time. RIP packets are not counted as traffic.

### **Example**

```
Command> set location hq idletime 30
hq idle timeout changed from 0 to 30 minutes
```

## **Input Filter**

This command sets a packet filter for packets entering the PortMaster from the interface this location establishes.

```
set location Locname ifilter Filtername
```

*Locname*                      A location name that is in the Location Table.

*Filtername*                  Name of the input filter that is in the Filter Table.

### **Usage**

When a filter is changed, any ports in use by the location must be reset to have the changes take effect.

You remove the filter by entering the command without a filter name.



**Note** – If a matching filter name is not in the Filter Table, this command is not effective and all traffic is permitted.

### **Example**

```
Command> set location hq ifilter hq.in
New input filter set for location hq
```

### **See Also**

set location ofilter - page 13-23  
add filter - page 14-5

## ***Output Filter***

This command sets a packet filter for packets exiting the PortMaster to the interface this location establishes.

set location *Locname* ofilter *Filtername*

*Locname*                      A location name that is in the Location Table.

*Filtername*                  Name of the output filter that is in the Filter Table.

### ***Usage***

When a filter is changed, any ports in use by the location must be reset to have the change take effect.

You remove the filter by entering the command without a filter name.

### ***Example***

Command> set location hq ofilter hq.out  
New output filter set for location hq

### ***See Also***

set location ifilter - page 13-22  
add filter - page 14-5



## Multilink

This command determines whether the PortMaster uses RFC 1717 Multilink PPP or Livingston multiline load-balancing for dial-out using multiple ports.

set location *Locname* multilink on | off

<i>Locname</i>	A location name that is in the Location Table.
on	Use Multilink PPP as defined in RFC 1717.
off	Use Livingston multiline load-balancing. This is the default.

## Usage

When you set the location to use Multilink PPP, set the maximum number of network dial-out ports to the number of ports you wish to use.

## Example

Command> set location hq multilink on  
hq multilink changed from off to on

## See Also

set location high-water - page 13-20  
set location maxports - page 13-25

## **Maxports**

This command sets the maximum number of network dial-out ports the PortMaster can use for this location.

set location *Locname* maxports *Number*

*Locname*                      A location name that is in the Location Table.

*Number*                      A number between 0 and 60. The default is 0.

## **Usage**

If 0 is selected, dialing to this location is disabled. If a number greater than 1 is selected, the PortMaster uses the value of "high\_water" to decide when to dial out on additional lines. If more than one line is open to the remote location, the PortMaster balances the load among the lines. If multiple lines are open, idle time is used to decide when to disconnect unused lines.

The maximum number of ports should be the last thing set for a location. When the number is set to greater than zero, the location is available for use.

## **Example**

```
Command> set location hq maxports 4
hq maximum port count changed from 0 to 4
```

## **See Also**

set location high\_water - page 13-20  
set location multilink - page 13-24

## DLCI Table Configuration

The data link connection identifier (DLCI) Table commands in Table 13-2 configure the DLCI Table, used to split a Frame Relay interface into primary and secondary subinterfaces.

Table 13-2 DLCI Table Commands

Command Syntax
show location <i>Locname</i>
add dlci   ipdlci   ipxdlci <i>Locname Dlc</i> [ <i>Ipaddress</i>   <i>Ipxnetwork</i> ]
delete dlci   ipdlci   ipxdlci <i>Locname Dlc</i>

### Show Location

This command displays configuration information for a specified location.

show location *Locname*

*Locname*                      A location name that is in the Location Table.

### Example

Command> show location sub1

Location:	sub1	Type:	Sub-Interface
IP Address:	192.168.3.1	Netmask:	255.255.255.0
Protocol:	Frame Relay	Options:	Routing
Group:	1	Mtu:	1500
IP DLCI's:	DLCI Address		

```

-----
16  0.0.0.0
17  0.0.0.0

```

### See Also

show S0 - page 3-37  
show all - page 3-21



## Add DLCI

This command sets the Frame Relay subinterfaces for a specified location that has been configured to use Frame Relay service.

```
add dlci | ipdlci | ipxdlci Locname DlcI [Ipaddress | Ipxnetwork]
```



**Note** – “ipdlci” is a synonym for “dlci.”

<i>ipdlci</i> or <i>dlci</i>	Use for IP networks.
<i>ipxdlci</i>	Use for IPX networks.
<i>Locname</i>	A location name that is in the Location Table.
<i>DlcI</i>	The DLCI number
<i>Ipaddress</i>	The optional IP address of the router attached to the permanent virtual circuit (PVC) represented by the DLCI.
<i>Ipxnetwork</i>	The optional IPX address of the network attached to the permanent virtual circuit (PVC) represented by the DLCI.

## Usage

The PortMaster supports a feature called DLCI bundling to allow one synchronous port with multiple DLCIs to be split into two Frame Relay subinterfaces. Splitting is done through the use of the Location Table and the DLCI Table. The port to which the Frame Relay is connected must be set for Frame Relay, and must be in the same dial group as the location. Each subinterface must have its own subnet or network number. Refer to the *Configuration Guide for PortMaster Products* for more information.

You can change values in the “add dlci” command by repeating the command with new values. You do not need to delete the existing DLCI entries before changing the values.

### **Example**

In this example, port S1 is configured for Frame Relay and a new location sub1 is configured as a subinterface. Commands and responses are shown.

Command> set s1 protocol frame  
Protocol for port S1 changed from slip to frame\_relay

Command> set s1 group 1  
Group number for port S1 changed from 0 to 1

Command> add location sub1  
Location sub1 successfully added

Command> set location sub1 protocol frame  
sub1 protocol changed to frame\_relay

Command> set location sub1 group 1  
sub1 group number changed from 0 to 1

Command> set location sub1 address 192.168.3.1  
sub1 destination changed from 0.0.0.0 to 192.168.3.1

Command> set location sub1 netmask 255.255.255.0  
sub1 netmask changed from 0.0.0.0 to 255.255.255.0

Command> set location sub1 routing on  
sub1 routing changed from off to on (broadcast,listen)

Command> add dlci sub1 16  
New dlci successfully added

Command> add dlci sub1 17  
New dlci successfully added

Command> save all  
Saving global configuration  
Saving ports  
User table successfully saved  
Hosts table successfully saved  
Static route table successfully saved  
Location table successfully saved



SNMP table successfully saved  
Filter table successfully saved  
New configurations successfully saved.

Command> reset s1  
Resetting port S1

### ***See Also***

delete dlci - page 13-29

## ***Delete DLCI***

This command deletes entries from the DLCI Table.

`delete dlci | ipdlci | ipxdlci Locname Dlc`

<i>dlci</i> or <i>ipdlci</i>	Use for IP networks.
<i>ipxdlci</i>	Use for IPX networks.
<i>Locname</i>	A specified location name that is in the Location Table.
<i>Dlc</i>	The DLCI number

### ***Usage***

This procedure is the reverse of adding the DLCI subinterfaces. You can confirm the removal by using the "show location" command.

### ***Example***

Command> delete dlci sub1 16  
DLCI successfully deleted  
Command> delete dlci sub1 17  
DLCI successfully deleted

### ***See Also***

add dlci - page 13-27





This chapter describes how to use the Command Line Interface to create, edit, and delete filters. Detailed command definitions follow a command summary table.

System Administrators can use the Command Line Interface to create appropriate packet filters to control access to specific hosts, networks and network services.

Once a filter is defined, it can be used with the "ptrace" command, or attached to an Ethernet interface, network hardwired port, user, or location. Filters for network hardwired ports and Ethernet interfaces are set for the port or interface. Filters for dial-in users are set in the User Table, or can be referenced by RADIUS. Filters for dial-out locations are set in the Location Table.

For more information about designing packet filters, refer to the *Configuration Guide for PortMaster Products*.

## Displaying Filter Data

To display information about your filters, use the following filter-specific commands:

- show table filter - see page 14-4
- show filter - see page 14-4
- ifconfig - see page 3-5

## Creating, Editing, and Deleting Filters

To create, edit, or delete a filter:

1. At the command line, create a new filter using the "add filter" command, as in the following example:

```
Command> add filter internet.in
```

2. At the command line, define a new (or edit an existing) filter using the "set filter" command, as in these examples:

```
Command> set filter Filtername RuleNumber Action  
Command> set ipxfilter Filtername RuleNumber Action  
Command> set sapfilter Filtername RuleNumber Action
```

*Filtername* is the name of a filter, *RuleNumber* is the number of the filter rule (1 or higher), and *Action* is the filter definition.

As you press [Enter] following each command, the PortMaster responds by echoing the configuration change you have made. For example:

```
Command> add filter s1.in  
New Filter successfully added
```

```
Command> set filter s1.in 1 permit tcp estab  
Filter s1.in updated
```



**Note** – Filter names have a maximum of 12 characters. If longer names are used, they are truncated to 12 characters.

3. When you finish making changes to the Filter Table, enter the "save filter" command to write your configuration changes to the nonvolatile memory of the PortMaster, as follows:

```
Command> save filter
```

"save all" can also be used.



## Summary of Filter Table Commands

The commands in Table 14-1 configure the Filter Table. Filters can be applied to Ethernet interfaces, users, locations, or network hardwired ports, and can be used for debugging with the "ptrace" command.



**Note** – The commands should be entered on one line, without any breaks. Line breaks shown here are due to the limited space available.

Table 14-1 Filter Table Configuration

Command Syntax
show table filter
show filter <i>Filtername</i>
save filter
add filter <i>Filtername</i>
delete filter <i>Filtername</i>
set filter <i>Filtername</i> <i>RuleNumber</i> permit deny [ <i>Ipaddress/NM Ipaddress(dest)/NM</i> ] [log]
set filter <i>Filtername</i> <i>RuleNumber</i> permit deny [ <i>Ipaddress/NM Ipaddress(dest)/NM</i> tcp [src eq lt gt <i>Tport</i> ] [dst eq lt gt <i>Tport</i> ] [established] [log]
set filter <i>Filtername</i> <i>RuleNumber</i> permit deny [ <i>Ipaddress/NM Ipaddress(dest)/NM</i> udp [src eq lt gt <i>Uport</i> ] [dst eq lt gt <i>Uport</i> ] [log]
set filter <i>Filtername</i> <i>RuleNumber</i> permit deny [ <i>Ipaddress/NM Ipaddress(dest)/NM</i> icmp [type <i>Itype</i> ] [log]
set ipxfilter <i>Filtername</i> <i>RuleNumber</i> permit deny [srcnet <i>Ipxnetwork</i> [srchost <i>Ipxaddress</i> ] [srcsocket eq gt lt <i>Ipxsock</i> ] [dstnet <i>Ipxnetwork</i> [dsthost <i>Ipxaddress</i> ] [dstsocket eq gt lt <i>Ipxsock</i> ]
set sapfilter <i>Filtername</i> <i>RuleNumber</i> permit deny [server <i>String</i> ] [network <i>Ipxnetwork</i> [host <i>Ipxaddress</i> ] [socket eq gt lt <i>Ipxsock</i> ]

## Description of Filter Commands

The following commands create, delete, and modify filters.

### Show Table Filter

This command shows a list of the filters in the Filter Table.

```
show table filter
```

#### Example

```
Command> show table filter
internet.in      ether0.in      check.in      pingtr.in
internet.out     ether.out
```

#### See Also

show filter - page 14-4

### Show Filter

This command shows the configuration of a specified filter.

```
show filter Filtername
```

*Filtername*                      Name of a filter that is in the Filter Table.

#### Example

```
Command> show filter internet.in
1 deny 192.168.200.0/24 0.0.0.0/0 ip
2 permit 0.0.0.0/0 0.0.0.0/0 tcp estab
3 permit 0.0.0.0/0 0.0.0.0/0 udp dst eq 53
4 permit 0.0.0.0/0 0.0.0.0/0 tcp dst eq 53
5 permit 0.0.0.0/0 0.0.0.0/0 tcp dst eq 25
6 permit 0.0.0.0/0 0.0.0.0/0 icmp
```

#### See Also

show table filter - page 14-4

## Save Filter

This command writes any changes in the Filter Table to the nonvolatile memory of the PortMaster.

save filter

### Usage

"save all" can also be used.

### Example

Command> save filter  
Filter table successfully saved  
New configurations successfully saved.

## Add Filter

This command creates a new filter name and adds it to the Filter Table.

add filter *Filtername*

*Filtername*                      Name for a filter, up to 12 characters long

### Usage

If the filter is to be used by RADIUS, it must end in ".in" if it is an input filter and ".out" if it is an output filter. Using the same convention to distinguish input and output filters is an excellent idea for any filter.

### Example

Command> add filter s1.in  
New Filter successfully added



## Delete Filter

This command deletes an existing filter from the Filter Table.

delete filter *Filtername*

*Filtername*                      Name of a filter in the Filter Table

## Usage

Use caution when removing filters from the Filter Table. Make sure that they are no longer needed for any packet filtering.

## Example

Command> delete filter s1.in

There is no automatic response to this command, but using the command "show table filter" will confirm that the filter has been removed from the Filter Table.

## See Also

add filter - page 14-5  
show table filter- page 14-4

## IP Filter

This command is used to configure a filter that controls passage of a packet through an interface.

set filter *Filtername* *RuleNumber* permit | deny [*Ipaddress/NM* *Ipaddress(dest)/NM*] [log]

<i>Filtername</i>	Name of an existing filter that is in the Filter Table.
<i>RuleNumber</i>	A filter rule number.
permit	Permits a packet that matches the filter to pass through the interface.
deny	Stops a packet that matches the filter from passing through the interface.

<i>Ipaddress</i>	Specifies the comparison with the source IP address of the packet.
<i>NM</i>	<p>The netmask that indicates the number of high-order bits of the source or destination IP address of the packet that must match an address in the filter. Any value between 0 and 32 inclusive, preceded by a slash (/), can be used; common mask values are</p> <p>/0 - To match all packets with any address. /16 - Looks at high-order 16 bits of the address. /24 - Looks at high-order 24 bits of the address. /32 - Looks at the entire IP address.</p>
<i>Ipaddress(dest)</i>	Specifies the comparison with the destination IP address of the packet.
<i>log</i>	Packets matching the rule are logged by syslog to the loghost.

## Usage

You construct filters by first creating the filter using the command "add filter," and then adding rules that permit or deny packets that match the criteria in the rules. You can update an existing filter by setting additional rules with new rule numbers and new filter criteria, or you can edit the existing rules. You can delete a rule by specifying only the rule number—for example "set filter s0.in 4". You cannot use the Command Line Interface to insert a rule between other rules, although you can do so with PMconsole.

Zero-length filters applied to Ethernet interfaces are treated as permit filters. That is, if a filter has no rules at all it permits everything through. If a filter has one or more rules, anything not explicitly permitted by a rule is denied at the end of the filter.

## Example

```
Command> set filter w1.in 1 deny 192.168.1.0/24 0.0.0.0/0 log
Filter w1.in updated
```

## See Also

add filter - page 14-5  
set loghost - page 4-5



## TCP Filter

This command is used to set filtering rules for TCP packets.

```
set filter Filtername RuleNumber permit|deny  
[Ipaddress/NM Ipaddress(dest)/NM] tcp [src eq|lt|gt Tport]  
[dst eq|lt|gt Tport] [established] [log]
```

<i>Filtername</i>	Name of an existing filter that is in the Filter Table.
<i>RuleNumber</i>	A filter rule number.
permit	Permits a packet that matches the filter to pass through the interface.
deny	Stops a packet that matches the filter from passing through the interface.
<i>Ipaddress</i>	Specifies the comparison with the source IP address of the packet.
<i>NM</i>	<p>The netmask that indicates the number of high-order bits of the source or destination IP address of the packet that must match an address in the filter. Any value between 0 and 32 inclusive, preceded by a slash (/), can be used; common mask values are</p> <ul style="list-style-type: none"><li>/0 - To match all packets with any address.</li><li>/16 - Looks at high-order 16 bits of the address.</li><li>/24 - Looks at high-order 24 bits of the address.</li><li>/32 - Looks at the entire IP address.</li></ul>
<i>Ipaddress(dest)</i>	Specifies the comparison with the destination IP address of the packet.
src	Specifies that the packet source port number be tested; see "Usage" for test criteria.
eq, lt, or gt	Mode of comparison of port numbers; equal (eq), less than (lt), or greater than (gt).
<i>Tport</i>	The designated TCP port.



dst	Specifies that the packet destination port number be tested; see "Usage" for test criteria.
established	Determine if the connection is for an established TCP network connection. Packets being sent to establish new TCP connections do not match this rule.
log	Packets matching the rule are logged by syslog to the loghost.



**Note** – This command should be entered on one line, without any breaks. The line breaks shown here are due to the limited space available.

### Usage

The filtering rules are based on source and destination port numbers, and the established state of a connection.

The order of rules in a filter is important because the PortMaster evaluates the rules in the order that they are numbered. Refer to the *Configuration Guide for PortMaster Products* for more information.

When using "src" or "dst," specify the comparison to be made, as follows:

[src   dst eq]	Test the source or destination port number in the packet to equal the port number.
[src   dst gt]	Test the source or destination port number in the packet to be greater than the port number.
[src   dst lt]	Test the source or destination port number in the packet to be less than the port number.

### Examples

```
Command> set filter w1.in 1 deny 192.168.1.0/24 0.0.0.0./0 log
Filter w1.in updated
```

```
Command> set filter w1.in 2 permit tcp estab
Filter w1.in updated
```

```
Command> set filter w1.in 3 permit tcp dst eq 80
Filter w1.in updated
```

```
Command> set filter w1.in 4 permit tcp dst eq 25
Filter w1.in updated
```

At any point, you can see the updates made to the filter by using the following command (shown with response):

```
Command> show filter w1.in
1 deny 192.168.1.0/24 0.0.0.0/0 ip log
2 permit 0.0.0.0/0 0.0.0.0/0 tcp estab
3 permit 0.0.0.0/0 0.0.0.0/0 tcp dst eq 80
4 permit 0.0.0.0/0 0.0.0.0/0 tcp dst eq 25
```

### *See Also*

add filter - page 14-5  
set loghost - page 4-5

## *UDP Filter*

This command is used to set filtering rules for User Datagram Protocol (UDP) packets. The filtering rules are very similar to those used for TCP packets, except that there is no "established" keyword for UDP.

```
set filter Filtername RuleNumber permit | deny
[IpAddress/NM IpAddress(dest)/NM] udp [src eq | lt | gt Uport]
[dst eq | lt | gt Uport] [log]
```

<i>Filtername</i>	Name of an existing filter that is in the Filter Table.
<i>RuleNumber</i>	A filter rule number.
permit	Permits a packet that matches the filter to pass through the interface.
deny	Stops a packet that matches the filter from passing through the interface.
<i>IpAddress</i>	Specifies the comparison with the source IP address of the packet.

NM	The netmask that indicates the number of high-order bits of the source or destination IP address of the packet that must match an address in the filter. Any value between 0 and 32 inclusive, preceded by a slash (/), can be used; common mask values are  /0 - To match all packets with any address. /16 - Looks at high-order 16 bits of the address. /24 - Looks at high-order 24 bits of the address. /32 - Looks at the entire IP address.
<i>Ipaddress(dest)</i>	Specifies the comparison with the destination IP address of the packet.
src	Specifies that the packet source port number be tested; see "Usage" for test criteria.
eq, lt, or gt	Mode of comparison of port numbers; equal (eq), less than (lt), or greater than (gt).
<i>Uport</i>	The designated UDP port.
dst	Specifies that the packet destination UDP port number be tested; see "Usage" for test criteria.
log	Packets matching the rule are logged by syslog to the loghost.



**Note** – This command should be entered on one line, without any breaks. The line breaks shown here are due to the limited space available.

## Usage

The order of rules in a filter is important because the PortMaster evaluates the rules in the order that they are numbered. Refer to the *Configuration Guide for PortMaster Products* for more information.



When using "src" or "dst," specify the comparison to be made, as follows:

[src   dst eq]	Test the source or destination port number in the packet to equal the port number.
[src   dst gt]	Test the source or destination port number in the packet to be greater than the port number.
[src   dst lt]	Test the source or destination port number in the packet to be less than the port number.

### Examples

```
Command> set filter w1.in 5 permit udp src eq 53
Filter w1.in updated
```

```
Command> set filter w1.in 6 permit udp dst eq 53
Filter w1.in updated
```

### See Also

add filter - page 14-5  
set loghost - page 4-5

## ICMP Filter

The filter command can be used to add the configuration information to filter a packet by type of ICMP message.

```
set filter Filtername RuleNumber permit | deny
[Ipaddress/NM Ipaddress(dest)/NM] icmp [type Itype] [log]
```

<i>Filtername</i>	Name of an existing filter that is in the Filter Table.
<i>RuleNumber</i>	A filter rule number.
permit	Permits a packet that matches the filter to pass through the interface.
deny	Stops a packet that matches the filter from passing through the interface.

<i>Ipaddress</i>	Specifies the comparison with the source IP address of the packet.
<i>NM</i>	<p>The netmask that indicates the number of high-order bits of the source or destination IP address of the packet that must match an address in the filter. Any value between 0 and 32 inclusive, preceded by a slash (/), can be used; common mask values are</p> <p>/0 - To match all packets with any address. /16 - Looks at high-order 16 bits of the address. /24 - Looks at high-order 24 bits of the address. /32 - Looks at the entire IP address.</p>
<i>Ipaddress(dest)</i>	Specifies the comparison with the destination IP address of the packet.
<i>Itype</i>	Type to compare against the type contained in the packet. Refer to RFC 1700 for a list of ICMP packet types.
<i>log</i>	Packets matching the rule are logged by syslog to the loghost.



**Note** – This command should be entered on one line, without any breaks. The line breaks shown here are due to the limited space available.

### **Examples**

Command> set filter w1.in 1 permit icmp  
Filter w1.in updated

### **See Also**

add filter - page 14-5  
set loghost - page 4-5



## IPX Filter

This command is used to set filtering rules for IPX packets.

```
set ipxfilter Filtername RuleNumber permit | deny  
[srcnet Ipxnetwork] [srchost Ipxaddress] [srcsocket eq | gt | lt Ipxsock]  
[dstnet Ipxnetwork] [dsthost Ipxaddress] [dstsocket eq | gt | lt Ipxsock]
```

<i>Filtername</i>	Name of an existing filter that is in the Filter Table.
<i>RuleNumber</i>	A filter rule number.
permit	Permits a packet that matches the filter to pass through the interface.
deny	Stops a packet that matches the filter from passing through the interface.
srcnet	Specifies the comparison with the source IPX network number contained in the packet.
<i>Ipxnetwork</i>	The IPX network number in hexadecimal format.
srchost	Specifies the comparison with the source IPX node address contained in the packet.
<i>Ipxaddress</i>	The IPX address in hexadecimal format.
srcsocket	Specifies that the source IPX socket number contained in the packet must be compared with the IPX socket number specified in the filter. A second keyword—eq, lt, or gt—must be used to indicate the mode of comparison.
eq, lt, or gt	Mode of comparison of socket numbers; equal (eq), less than (lt), or greater than (gt).
<i>Ipxsock</i>	A socket number specified for the comparison, a hexadecimal value between 0x0000 and 0xffff.



dstnet	Specifies the comparison with the destination IPX network number contained in the packet.
dsthost	Specifies the comparison with the destination IPX node address contained in the packet.
dstsocket	Specifies that the destination IPX socket number contained in the packet must be compared with the IPX socket number specified in the filter. A second keyword—eq, lt, or gt—must be used to indicate the mode of comparison.



**Note** – This command should be entered on one line, without any breaks. The line breaks shown here are due to the limited space available.

## Usage

The filtering rules are based on source or destination host, network, or socket.

When using “srcsocket” or “dstsocket” specify the comparison to be made, as follows:

eq	Test the source or destination socket number in the packet to equal the value.
gt	Test the source or destination socket number in the packet to be greater than the value.
lt	Test the source or destination socket number in the packet to be less than the value.

## Examples

```
Command> set ipxfilter e0.in 1 permit dstnet C009C901
Filter e0.in updated
```

```
Command> set ipxfilter e0.in 2 permit srcnet C009C905
Filter e0.in updated
```

```
Command> set ipxfilter e0.in 3 permit srchost A0B1C2D3E4F5
Filter e0.in updated
```

```
Command> set ipxfilter e0.in 4 permit dsthost A1B2C3D4E5F6
Filter v.in updated
```

```
Command> set ipxfilter e0.in 5 deny dstsocket eq 451
Filter e0.in updated

Command> set ipxfilter e0.in 6 permit srcsocket gt 455
Filter e0.in updated

Command> show ipxfilter e0.in
- IPX Rules -
1 permit dstnet C009C901
2 permit srcnet C009C905
3 permit srchost A0B1C2D3E4F5
4 permit dsthost A1B2C3D4E5F6
5 deny dstsocket eq 0451
6 permit srcsocket gt 0455
```

### ***See Also***

add filter - page 14-5

## ***SAP Filter***

This command is used to set filtering rules for IPX SAP packets.

```
set sapfilter Filtername RuleNumber permit|deny [server String]
[network Ipxnetwork] [host Ipxaddress] [socket eg|gt|lt Ipxsock]
```

<i>Filtername</i>	Name of an existing filter that is in the Filter Table.
<i>RuleNumber</i>	A filter rule number.
<i>permit</i>	Permits a packet that matches the filter to pass through the interface.
<i>deny</i>	Stops a packet that matches the filter from passing through the interface.
<i>server</i>	Specifies the comparison with the name of the server which is advertising its service.
<i>String</i>	SAP server name.



<b>network</b>	Specifies the comparison with the server's IPX network number.
<b><i>Ipxnetwork</i></b>	The IPX network number specified in hexadecimal format.
<b>host</b>	Specifies the comparison with the server's IPX node address.
<b><i>Ipxaddress</i></b>	The IPX node address in hexadecimal format.
<b>socket</b>	Specifies that the server's IPX socket number must be compared with the IPX socket number specified in the filter. A second keyword—eq, lt, or gt—must be used to indicate the mode of comparison.
<b>eq, lt, or gt</b>	Mode of comparison of socket numbers; equal (eq), less than (lt), or greater than (gt).
<b><i>Ipxsock</i></b>	The socket number, a hexadecimal value between 0x0000 and 0xffff.



**Note** – This command should be entered on one line, without any breaks. The line breaks shown here are due to the limited space available.

## Usage

The filtering rules are based on server, network, host, or socket. SAP packets can only be filtered on output, not on input.

When using "socket," specify the comparison to be made, as follows:

<b>eq</b>	Test the socket number in the packet to equal the specified value.
<b>gt</b>	Test the socket number in the packet to be greater than the specified value.
<b>lt</b>	Test the socket number in the packet to be less than the specified value.



### ***Example***

Command> set sapfilter e0.out 1 permit network C009C901  
Filter e0.out updated

Command> set sapfilter e0.out 2 permit host A0B1C2D3E4F5  
Filter e0.out updated

Command> set sapfilter e0.out 3 deny socket eq 452  
Filter e0.out updated

Command> show sapfilter e0.out  
1 permit network C009C901  
2 permit host A0B1C2D3E4F5  
3 deny socket eq 0452

### ***See Also***

add filter - page 14-5

This chapter describes how to configure the Static Route Table and Host Table in the nonvolatile memory of the PortMaster.

## Displaying Settings

To display information about these tables, use the following commands:

- show routes - see page 15-3
- show ipxroutes - see page 15-6
- show table host - see page 15-10

For information about these commands, refer to "Description of Static Route Table Commands," on page 15-3, and "Description of Host Table Commands," on page 15-10.

## Configuring the Static Route Table and Host Table

To configure the tables:

1. At the command line, enter your information as in this example:

```
Command> add route 192.168.7.0 192.168.7.1 1
Command> add ipxroute C009C901 00000002:A0B1C2D3E4F5 2 4
Command> add host 192.168.206.2 bach
```

As you press [Enter] following each command, the PortMaster responds by echoing the change you have made. For example:

```
Command> delete route 192.168.7.0 192.168.7.1
Route successfully deleted
```

2. When you finish configuring the tables, enter the "save route" or "save host" command to write your configuration changes to the nonvolatile memory of the PortMaster, as follows:

Command> save route

Command> save host

"save all" can also be used.

## Summary of Static Route Table Commands

The Static Route Table commands in Table 15-1 are used to configure the Static Route Table.

Table 15-1 Static Route Table Commands

Command Syntax
show routes
save route
add route <i>Ipaddress Ipaddress(gw) Metric</i>
delete route <i>Ipaddress Ipaddress(gw)</i>
show ipxroutes
add ipxroute <i>Ipxnetwork Ipxaddress Metric Ticks</i>
delete ipxroute <i>Ipxnetwork Ipxaddress</i>



**Note** – For information on setting the IP default gateway, see page 4-8.



## *Description of Static Route Table Commands*

Static routes are used to provide routing information instead of or in addition to that provided by RIP. The static routes are stored in the PortMaster Static Route Table.

### *Show Routes*

This command displays the PortMaster IP routes.

show routes

### *Usage*

Note that IP routes and IPX routes are displayed separately.

The fields shown in the example are defined as follows. ComOS 3.5 also displays a column for the prefix length of the destination and source of the route.

Destination	Destination IP address
Gateway	Gateway IP address
Flag	H - A host route N - A network or subnet route S - A static route L - A route to a directly attached network or host D - A dynamic route C - A route that has been recently changed O - An obsolete route, scheduled for deletion
Met	Metric—hop count to the remote destination
Interface	The interface to the IP network

### **Example**

Command> show routes

Destination	Gateway	Flag	Met	Interface
0.0.0.0	192.168.96.2	NS	1	ether0
192.168.128.0	192.168.96.2	ND	3	ether0
192.168.96.0	192.168.96.6	NL	1	ether0
192.168.1.0	192.168.96.31	ND	2	ether0
192.168.1.0	192.168.96.2	ND	2	ether0
192.168.2.0	192.168.96.2	ND	3	ether0
192.168.131.0	192.168.96.2	ND	4	ether0
192.168.3.0	192.168.96.2	ND	3	ether0

### **Save Route**

This command writes the current PortMaster Static Route Table to the nonvolatile memory of the PortMaster.

save route

### **Usage**

"save all" can also be used.

### **Example**

Command> save route

Static route table successfully saved

New configurations successfully saved.

## Add Route

This command adds a static route to the PortMaster IP Static Route Table.



**Note** – If you plan to use a static netmask, add it before setting any static routes that will be affected.

*add route Ipaddress Ipaddress(gw) Metric*

<i>Ipaddress</i>	The host or network IP address
<i>Ipaddress(gw)</i>	Gateway IP address
<i>Metric</i>	Hop count to the remote destination

### Usage

The destination is the host or network IP address for which the PortMaster is routing. The gateway is the address of a router where packets should be sent for forwarding to the destination. The gateway should never be set to any address on the PortMaster itself.

### Example

Command> add route 192.168.7.0 192.168.7.1 1  
New route entry successfully added

### See Also

add netmask - page 4-25  
delete route - page 15-6  
add route - page 11-16



## Delete Route

This command deletes a static route from the PortMaster IP Static Route Table.

```
delete route Ipaddress Ipaddress(gw)
```

<i>Ipaddress</i>	Destination IP address
------------------	------------------------

<i>Ipaddress(gw)</i>	Gateway IP address
----------------------	--------------------

### Usage

Only static routes can be deleted.

### Examples

```
Command> delete route 192.168.7.0 192.168.7.1  
Route successfully deleted
```

### See Also

add route - page 15-5

## Show IPX Routes

This command displays the PortMaster IPX routes.

```
show ipxroutes
```

### Usage

Note that the IP routes and the IPX routes are displayed separately.

The fields shown in the example are defined as follows:

Network	Destination IPX network.
---------	--------------------------

Gateway	Gateway IPX address.
---------	----------------------

Flag	<p>H - A host route  N - A network or subnet route  S - A static route  L - A route to a directly attached network or host  D - A dynamic route  C - A route that has been recently changed  O - An obsolete route, scheduled for deletion</p>
Met	Metric—hop count to the remote destination.
Ticks	The time it takes to send the packet to the destination network in 50-ms increments.
Interface	The interface to the IPX network.

### Example

Command> show ipxroutes

Network	Gateway	Flag	Met	Ticks	Interface
0000000F	0000000F:00C005010620	NL	1	1	ether0

### Add IPX Route

This command adds a static route to the PortMaster IPX Route Table.

*add ipxroute Ipxnetwork Ipxaddress Metric Ticks*

<i>Ipxnetwork</i>	Destination IPX network number.
<i>Ipxaddress</i>	Gateway IPX address in the following format: network number and node address separated by a colon (:).
<i>Metric</i>	Hop count to the remote destination.
<i>Ticks</i>	The time it takes to send the packet to the destination network in 50-ms increments.

### **Usage**

The destination is the IPX network for which the PortMaster is routing. The gateway is the address of a router where packets are sent for forwarding to the destination. The gateway should never be set to the PortMaster address.

### **Example**

```
Command> add ipxroute C009C901 00000002:A0B1C2D3E4F5 2 4
New route successfully added
```

### **See Also**

delete ipxroute - page 15-8

## **Delete IPX Route**

This command deletes a static route from the PortMaster IPX Route Table.

```
delete ipxroute Ipxnetwork Ipxaddress
```

*Ipxnetwork*                      Destination IPX network number.

*Ipxaddress*                    Gateway IPX address in the following format: network number  
and node address separated by a colon (:).

### **Usage**

Only static routes can be deleted.

### **Example**

```
Command> delete ipxroute C009C901 00000002:A0B1C2D3E4F5
Route successfully deleted
```

### **See Also**

add ipxroute - page 15-7



## Configuring the Host Table

Each host attached to an IP network has a unique IP address. The PortMaster supports a local Host Table to map host names to IP addresses. Host names are for the convenience of the administrator who uses the Command Line Interface, and to record host names entered by users at the host prompt. To avoid confusion and reduce administrative overhead, Livingston recommends using Domain Name Service (DNS) or Network Information Service (NIS) for host name resolution rather than using the local Host Table.

For information on setting the NIS or DNS server and domain, refer to Chapter 4, "Global Configuration."

## Summary of Host Table Commands

The host table commands in Table 15-2 are used to configure the Host Table.

Table 15-2 Host Table Commands

Command Syntax
show table host
save host
add host <i>Ipaddress String</i>
delete host <i>Ipaddress   String</i>



**Note** – The PortMaster always checks the local Host Table before using DNS or NIS.

## ***Description of Host Table Commands***

These commands are used to maintain the PortMaster Host Table.

### ***Show Table Host***

This command displays the Host Table from the PortMaster.

```
show table host
```

### ***Example***

```
Command> show table host
192.168.200.4      chopin
172.16.200.3      elgar
```

### ***Save Host***

This command writes the current Host Table to the nonvolatile memory of the PortMaster.

```
save host
```

### ***Usage***

The command may also be entered as "save hosts"; "save all" can also be used.

### ***Example***

```
Command> save host
Hosts table successfully saved
New configurations successfully saved.
```

## ***Add Host***

This command adds a host to the Host Table.

**add host *Ipaddress String***

*Ipaddress*                      IP address of the host

*String*                        A string of printable characters representing the host name

### ***Example***

Command> add host 192.168.200.4 chopin

New host entry successfully added

## ***Delete Host***

This command deletes a host from the Host Table.

**delete host *Ipaddress | String***

*Ipaddress*                      IP address of the host

*String*                        The host name

### ***Examples***

Command> delete host chopin

Host entry successfully deleted





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